UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

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Reply to
Attn of: OWW-130

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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JAN 25 2010
IDAHO F & W OFFICE
U.S. FWS

Jeffery L. Foss
State Supervisor
Idaho Fish and Wildlife Office
1387 S. Vinnell Way, Room 368
Boise, ID 83709

Re: NPDES Permit No.: IDG-37-0000
Small Suction Dredge Mining

Dear Mr. Foss:

Enclosed for your information and review is a copy of a draft National Pollutant Discharge Elimination System (NPDES) general permit (GP) which the U.S. Environmental Protection Agency Region 10 proposes to issue for the State of Idaho. Also enclosed is the fact sheet, which provides the technical basis for the permit conditions, and a Biological Evaluation. The public comment period for the draft GP will run for 45 days, January 22 through March 8.

In the Biological Evaluation, EPA has determined that issuance of this permit **is not likely to have an adverse effect** on federally listed threatened or endangered species or critical habitat. The reasons for these determinations can be found in the Biological Evaluation.

EPA is hereby requesting your agency's concurrence that issuance of the GP is not likely to adversely affect threatened and endangered species or EFH. Please respond to our request for concurrence by March 15. In addition, any comments that you may have on the draft GP are due to EPA by the end of the public comment period.

Technical questions regarding the permit may be referred to Cindi Godsey at (907) 271-6561 or via e-mail at godsey.cindi@epa.gov

Sincerely,

Michael J. Lidgard, Manager
NPDES Permits Unit

Enclosures

cc: Johnna Sandow – IDEQ/Boise (no enclosures)

Biological Evaluation

for

Small Placer Miners in Idaho

National Pollutant Discharge Elimination System (NPDES)

General Permit

(NPDES General Permit No.: IDG-37-0000)

for the

U.S. FISH AND WILDLIFE SERVICE

and the

NATIONAL MARINE FISHERIES SERVICE

U.S. Environmental Protection Agency

Region 10

Seattle, Washington

January 2010

1. EXECUTIVE SUMMARY

The EPA proposes to issue a general NPDES permit applicable for small placer miners in Idaho. The general permit places conditions on the discharge of pollutants from each mining operation and the best management practices (BMPs) that must be employed in order to ensure protection of water quality and human health. The number of placer miners covered under this permit will be determined by the number of NOIs submitted once the permit is issued; however, a list of 979 potential permittees based on previous permit applicants from the Idaho Department of Water Resources (IDWR) database including the waterbodies that have been previously permitted are provided in Appendix A of the Biological Evaluation.

Section 7 of the Endangered Species Act (ESA) requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) if the federal agency's actions could beneficially or adversely affect any threatened and endangered species or their critical habitat. The U.S. Environmental Protection Agency (EPA) conducted a biological evaluation to identify potential impacts to federally-listed endangered or threatened species that could result from the issuance of a National Pollutant Discharge Elimination System (NPDES) general permit for small placer miners in Idaho.

Water quality-based Effluent Limitations. Section 301(b)(1) of the Act requires the establishment of limitations in permits necessary to meet water quality standards by July 1, 1977. All discharges to state waters must comply with state and local water management plans as well as with state water quality standards, including the state's antidegradation policy. Discharges to state waters must also comply with limitations imposed by the state as part of its certification of NPDES permits under section 401 of the Act.

The NPDES regulations at 40 CFR 122.44(d)(1) require that permits include water quality-based limits that "Achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality." EPA has determined that turbidity is a pollutant of concern and it is expected that the proposed BMPs, when implemented properly, will be protective of Water Quality Standards.

Best Management Practices (BMPs). BMPs are measures that are intended to prevent or minimize the generation and the potential for the release of pollutants from industrial facilities to the waters of the United States through normal operations and ancillary activities. Pursuant to Section 402(a)(1) of the Clean Water Act, development and implementation of BMP Plans may be included as a condition in NPDES permits. Section 402(a)(1) authorizes EPA to include miscellaneous requirements that are deemed necessary to carry out the provision of the Act in permits on a case-by case basis. BMPs are required to control or abate the discharge of pollutants in accordance with 40 CFR § 122.44(k). The proposed permit requires compliance with the following BMPs:

A. Silt and Clay Areas: Dredging of concentrated silt and clay should be avoided.

> The Permittee shall use reasonable care to avoid dredging silt and clay materials that would result in a significant increase in turbidity.

Reasonable care includes moving the dredge to a new location or reducing the volume of effluent discharge by limiting operation speed of the suction dredge.

This practice will decrease the amount of fine material that will be released into the water that could cause turbidity plumes in excess of the permitted distance.

B. Mercury: If mercury is found during suction dredge operation, (i.e. mercury is collected in the sluice box), the operator must:

1) Stop dredging immediately;

2) Contact the local regional office of IDEQ ;

3) Keep the mercury collected, do not remobilize the collected mercury; and

4) Work with the appropriate regional office of IDEQ to dispose of the mercury properly.

Mercury was used in historic placer mining operations to amalgamate gold fines. Elemental mercury may be present in stream beds and banks and if remobilized can result in impacts to fish and other aquatic life. Placer miners encountering mercury should take above steps to prevent mercury from reentering the water body.

C. Spacing between operations: Suction dredges shall not operate within 800 feet of:

1) another suction dredging operation occurring simultaneously or,

2) a location where it is apparent that another operation has taken place within the past month

This practice should ensure that the mixing zone of a facility does not overlap with that of another since 800 feet is the distance of a 500 foot mixing zone for each operation plus a designated 300 foot buffer before the next suction dredge would impact water quality.

D. Spawning Fish and Spawning Habitat: Dredging and discharging are prohibited within 500 feet of locations where:

1) fish are spawning or

2) fish eggs or alevins are known to exist at the time dredging occurs

In addition: Suction dredge operation must not occur in gravel bar areas at the tail of pools or where operations result in fine sediments discharging onto gravel bars.

This BMP is designed to minimize impacts to fish spawning and spawning habitat.

E. Stream Channel: Suction dredge operation must not change the stream channel in such a way that directs the flow of water into a stream bank, which may cause bank erosion or destruction of the natural form of the stream channel.

> *Under Section 101 of the Clean Water Act, EPA is required to restore and maintain the chemical, physical and biological integrity of waters of the United States. Protection of the physical integrity of waterbodies includes protection of habitat.*

F. Erosion: Suction dredge operation that results in undercutting, littoral channeling, stream bank or beach erosion, is prohibited.

> *This practice will ensure that erosion does not occur and that the finer sediments that may be found in these areas do not cause excessive turbidity in the receiving waters.*
>
> In addition, per IDAPA 37.03.07.64.04, the operation of the dredge shall be done in a manner so as to prevent the undercutting of stream banks.

G. Dams or Diversions: Damming or diversions within a stream channel are not authorized by this GP.

> *EPA cannot authorize dams or diversions under Section 402 of the CWA. These are generally authorized under Section 404 of the CWA which is administered by the U.S. Army Corps of Engineers.*

H. Boulders and Natural Obstructions: Explosives, motorized winches or other motorized equipment to move boulders, logs, or other natural obstructions are prohibited under this GP.

> *This practice should ensure that important habitat which may include large organic debris and large boulders in these areas will not be destroyed.*

I. Wheeled or Tracked Equipment: Wheeled or tracked equipment used in-stream is prohibited while dredging is in progress.

> *This practice should minimize turbidity from sources other than the suction dredge.*

J. Refueling: Care shall be taken by the operator during refueling of equipment to prevent spillage.

Any spills shall be cleaned up using materials such as sorbent pads and booms.

All spills shall be reported immediately or as soon as practical to the IDEQ and the National Response Center at 1-800-424-8802.

All chemical or petroleum products shall be stored in a safe and secure location at all times. Fuel not stored and dispensed with an ANSO or UL approved safety container must be maintained not less than 100 feet from the mean high water mark.

This practice will decrease the potential for contamination of surface water by petroleum products.

EPA has determined that issuance of this permit **is not likely to have an adverse effect** on essential fish habitat (EFH), federally listed threatened or endangered (T&E) species or critical habitat. Effluent limitations have been incorporated into the draft permit based on criteria considered to be protective of overall water quality in Idaho waters. The USFWS and the NMFS will be provided with the draft permit, the fact sheet, and this BE during the public comment period. Any comments received from NMFS regarding EFH, T&E species, or critical habitat will be considered prior to final issuance of this permit.

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ACRONYMS

BE	Biological Evaluation
BLM	Bureau of Land Management
BMP	Best Management Practice
CFR	Code of Federal Regulations
CWA	Clean Water Act
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
F	Fahrenheit
ft^2	Square Feet
GP	General Permit
IDEQ	Idaho Department of Environmental Quality
IDWR	Idaho Department of Water Resources
in^2	Square Inches
NMFS	National Marine Fisheries Service
NOAA	National Oceanic Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PFMC	Pacific Fish Management Council
RM	River Mile
T & E	Threatened and Endangered
TSS	Total Suspended Solids
USFWS	United Service Fish and Wildlife Service

SECTION 1.0 INTRODUCTION

The EPA proposes to issue a general NPDES permit applicable for small placer miners in Idaho. The general permit places conditions on the discharge of pollutants from each mining operation and the best management practices (BMPs) that must be employed in order to ensure protection of water quality and human health.

The Endangered Species Act (ESA) requires federal agencies to consult with the U. S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) if the federal agency's actions could beneficially or adversely affect any threatened and endangered species or their critical habitat. In this case, the federal agency is the United States Environmental Protection Agency (EPA), and the discretionary action is the issuance of a National Pollutant Discharge Elimination System (NPDES) general permit (GP) for small placer miners in Idaho.

The action evaluated in this Biological Evaluation (BE) could affect species under the jurisdiction of both the USFWS and NMFS. This BE identifies the endangered, threatened, and candidate species and critical habitat in the project area and assesses potential effects to these species that may result from the discharge authorized in the proposed NPDES general permit for small suction dredge placer miners.

The following major discussions are provided in this evaluation using the best scientific and commercial data available:

- The proposed action and the action area (including the relevance of the environmental baseline to the species' current status);
- The listed species and critical habitat in the area of the proposed action and definitions of the species' biological requirements and habitat, abundance trends, and current status;
- The effects analyses of the proposed action on the listed species and critical habitat; and
- References are provided at the end of the document.

In order to adhere to the recommended contents of a biological assessment for submission to USFWS (USFWS and NMFS, 1998), the following table lists the sections of this BE that correspond to the recommended content topics.

Table 1. Corresponding Sections of this BE to NMFS and USFWS Recommended Contents for Biological Assessments

	Recommended Content	Heading in this BE	Section(s)
Introduction		Introduction	I
List of Species	List of Species (citation) Critical Habitat (official status)	List of Species	II
Project Description	Type and scope of Project Project components pertinent to the species Management actions such as proposed monitoring of species and mitigation that may affect species	Description of Action	III
Description of Project Area	Legal description and map Define action area Current condition of habitat parameters Past and present activities related to species/habitat Analysis of cumulative effects	Description of Action Area	IV
Description of Species and Habitat	General species descriptions and habitat requirements Species distribution and habitat specific to action area by life history phase Species status, distribution, and abundance trends in action area Description of Critical Habitat, if designated	Species Descriptions Habitat Characteristics of the Receiving waters	V VI
Inventories and Surveys	Describe effort to obtain information on species status Describe information used in Description of Species and Habitat in a Table	Species Descriptions	V
Analysis of Effects	Description of parameters of concern Analysis of potential direct and indirect effects Analysis of interdependent and interrelated actions Environmental baseline – track the conservation status of a species and its environment up to the present moment (starting at time of listing or earlier) Effects determinations Analysis of effects to designated critical habitat	Analysis of Effects from the Action	VII
Conclusions	Summary of determinations Statements of effect of the project on the species (e.g., no affect, may affect, etc.)	Conclusions	VII
References	Literature cited Copies of pertinent documents and maps List of personal communication contacts, contributors, preparers	References	I-VII
Supporting Information	Supporting documents that will assist the reviewer	Appendices	A-I

SECTION 2.0 LIST OF SPECIES

Information provided by the NMFS and the USFWS on the distribution of threatened and endangered species was consulted to identify species that may occur in the vicinity of the discharges. In a letter dated December 30, 2009 the USFWS indicated the listed and candidate federally-threatened or endangered species that are known to occur in Idaho, 14420-2010-SL-0086. These are listed in Table 2. However, many of these are not found in the action areas and would not be affected by small suction dredge placer miners. Therefore, EPA determined that the NPDES permit for small suction dredge placer miners would have no effect on Canada Lynx, Northern Idaho ground squirrel, Selkirk woodland caribou, spalding's catchfly, slickspot peppergrass, Ute ladies tresses, McFarlane's four-o-clock, water howelia, yellow billed cuckoo, southern Idaho ground squirrel, Goose Creek milkvetch, Columbia spotted frog, and Christ's paintbrush. These species are discussed in Section 2.1 and a rationale for the no effect determination is provided, however these species are not discussed further in this BE.

NMFS has designated the Snake River Basin DPS of steelhead (*Oncorhynchus mykiss*) as threatened (71 FR 833), adding 6 hatchery populations and resident rainbow trout populations in 10 counties in Idaho: Clearwater, Blaine, Adams, Custer, Idaho, Latah, Lemhi, Lewis, Nez Perce, and Valley. The Snake River Basin steelhead DPS includes all naturally spawned populations of steelhead in streams in the Snake River Basin of southeast Washington, northeast Oregon, and Idaho (62 FR 43937; August 18, 1997). Six artificial propagation programs are considered part of the DPS: the Tucannon River, Dworshak NFH, Lolo Creek, North Fork Clearwater, East Fork Salmon River, and the Little Sheep Creek/Imnaha River Hatchery steelhead hatchery programs. NMFS has determined that these artificially propagated stocks are no more divergent relative to the local natural population(s) than what would be expected between closely related natural populations within the DPS (NMFS, 2004b).

Critical habitat has also been designated for the Snake River Basin DPS of steelhead in the following counties (65 FR 7764): Adams, Blaine, Boise, Clearwater, Custer, Idaho, Latah, Lewis, Lemhi, Nez Perce and Valley. This consists of river reaches of the Columbia, Snake, and Salmon Rivers, and all tributaries of the Snake River including Clearwater, Grande Ronde, Selway and Tucannon Rivers (except reaches above impassable natural falls, and Dworshak and Hells Canyon Dam).

USFWS has designated critical habitat for the bull trout (*Salvelinus confluentus*) in 8 counties in Idaho: Adams, Benewah, Bonner, Boundary, Kootenai, Nez Perce, Shoshone and Washington. Approximately 294 stream/shoreline miles have been designated in Idaho as critical habitat for the bull trout. River basins with designated critical habitat include the Clark Fork, Kootenai, Lake Coeur d'Alene, Clearwater, Salmon, Southwest Idaho, Little Lost, Imnaha-Snake, and Hells Canyon Complex. No critical habitat is being designated for the Jarbidge River population of bull trout in Nevada and southern Idaho, where the Secretary of the Interior determined that the benefits of excluding the area outweighed the benefits of including it.

Designated critical habitat for the Snake River sockeye salmon (*Oncorhynchus nerka*) consists of river reaches of the Columbia, Snake, and Salmon Rivers, Alturas Lake Creek, Valley Creek, and Stanley, Redfish, Yellow Belly, Pettit, and Alturas Lakes (Including their inlet and outlet creeks).

Designated critical habitat for fall Chinook salmon (*Oncorhynchus tshawytscha*) in Idaho consists of river reaches of the Snake River, and all tributaries of the Snake River presently or historically accessible to Snake River fall Chinook salmon (except reaches above impassable natural falls, and Dworshak and Hells Canyon dam).

Designated critical habitat for spring/summer Chinook salmon (*Oncorhynchus tshawytscha*) in Idaho consists of river reaches of the Snake River, and all tributaries of the Snake River (except the Clearwater River) presently or historically accessible to Snake River spring/summer Chinook salmon (except reaches above impassable natural falls and Hells Canyon Dam).

Designated critical habitat for the Kootenai River White Sturgeon includes 18.3 river miles (RM) (29.5 river kilometers (RKM)) of the Kootenai River which are designated as critical habitat within Boundary County, Idaho (73 FR 39505).

Designated critical habitat for Canada lynx includes terrestrial habitat within Boundary County, Idaho.

No critical habitat has been designated or proposed for the other listed species.

Table 2: Listed and Candidate Species and Listed Critical Habitat in Idaho[1]

	Mammals				Fish						Plants					Invertebrates					Candidat		
County	Selkirk Mountains Woodland caribou	Grizzly Bear	Northern Idaho Ground Squirrel	Canada Lynx	Kootenai River White Sturgeon	Bull Trout	Sockeye Salmon	Spring/Summer Chinook Salmon	Fall Chinook Salmon	Steelhead Trout	MacFarlane's Four-O'Clock	Slickspot Peppergrass	Water Howellia	Ute Ladies'- Tresses	Spalding's Catchfly	Utah Valvata Snail	Snake River Physa Snail	Bliss Rapids Snail	Banbury Springs Lanx	Bruneau Hot Springsnail	Christ's Paintbrush	Columbia Spotted Frog	Goose Creek Milkvetch
Ada						x						x											
Adams			x	x		x[3]		x[3]	x[3]	x[3]													
Bannock																x							
Bear Lake				x																			
Benewah				x		x[3]							x		x								
Bingham														x		x							
Blaine				x		x	x[3]	x[3]		x[3]						x							
Boise				x		x																	
Bonner	x	x		x		x[3]																	
Bonneville				x										x		x							
Boundary	x	x		x	x[3]	x																	
Butte				x		x																	
Camas				x		x										x							
Canyon												X											
Caribou				x																			
Cassia																x	x				x		x
Clark				x																			
Clearwater				x		x			x[3]	x[3]													
Custer				x		x	x[3]	x[3]		x[3]													

Table 2: Listed and Candidate Species and Listed Critical Habitat in Idaho[1]

County	Mammals				Fish						Plants					Invertebrates					Candidat		
	Selkirk Mountains Woodland caribou	Grizzly Bear	Northern Idaho Ground Squirrel	Canada Lynx	Kootenai River White Sturgeon	Bull Trout	Sockeye Salmon	Spring/Summer Chinook Salmon	Fall Chinook Salmon	Steelhead Trout	MacFarlane's Four-O'Clock	Slickspot Peppergrass	Water Howellia	Ute Ladies'- Tresses	Spalding's Catchfly	Utah Valvata Snail	Snake River Physa Snail	Bliss Rapids Snail	Banbury Springs Lanx	Bruneau Hot Springsnail	Christ's Paintbrush	Columbia Spotted Frog	Goose Creek Milkvetch
Elmore				x		x						X					x	x					
Franklin				x																			
Fremont				x										x		x							
Gem						x						X											
Gooding																x	x	x	x				
Idaho				x		x	x[3]	x[3]	x[3]	x[3]	x				x								
Jefferson				x										x		x							
Jerome																x	x	x					
Kootenai				x		x[3]							x		x								
Latah				x						x[3]			x		x								
Lemhi				x		x	x[3]	x[3]		x[3]													
Lewis						x	x[3]	x[3]	x[3]	x[3]					x								
Lincoln																x							
Madison				x										x		x							
Minidoka																x	x						
Nez Perce				x		x[3]	x[3]	x[3]	x[3]	x[3]					x								
Oneida																							
Owyhee						x						X					x			x		x	

Table 2: Listed and Candidate Species and Listed Critical Habitat in Idaho[1]

	Mammals				Fish						Plants					Invertebrates					Candidat		
County	Selkirk Mountains Woodland caribou	Grizzly Bear	Northern Idaho Ground Squirrel	Canada Lynx	Kootenai River White Sturgeon	Bull Trout	Sockeye Salmon	Spring/Summer Chinook Salmon	Fall Chinook Salmon	Steelhead Trout	MacFarlane's Four-O'Clock	Slickspot Peppergrass	Water Howellia	Ute Ladies'- Tresses	Spalding's Catchfly	Utah Valvata Snail	Snake River Physa Snail	Bliss Rapids Snail	Banbury Springs Lanx	Bruneau Hot Springsnail	Christ's Paintbrush	Columbia Spotted Frog	Goose Creek Milkvetch
Payette						x						X											
Power																x							
Shoshone				x		x[3]							x		x								
Teton				x																			
Twin Falls																x	x	x				x	
Valley			x	x		x		x[3]		x[3]													
Washington			x			x[3]																	

[1] Please see attached Threatened, Endangered, and Candidate Species summary for species specific information.
[2] Candidate species have no protection under the Act, but are included for your early planning consideration.
Candidate species could be proposed or listed during the project planning period. The Service advises an evaluation of potential effects on section 7 consultation under the Act should the species become listed.
[3] Designated Critical Habitat in addition to species presence.

2.1 Species Unlikely to Occur in the Action Area

There are a number of species that while listed as threatened or endangered for the state of Idaho, due to their habitat requirements, known locations or limited populations, are not likely to occur in the action area or be affected by the activities covered under the general permit. The species are listed below along with the rationale for why they would not be located in the action area. Since these species will have no exposure to the effluent from the placer mining covered in this permit, EPA has determined there would be no effect on the following species. Since these species are not likely to occur in the action area and will have no effect from the effluents covered in this permit, they are not discussed in additional detail.

Canada Lynx

Given the isolated areas where Canada lynx are known to occur and that are targeted for recovery, and that their diet is comprised largely of small terrestrial mammals, the exposure of the lynx to receiving waters for small placer mines is unlikely or infrequent. Therefore, EPA has determined that the issuance of these NPDES general permit for small placer miners in Idaho will have **no effect** on the Canada lynx.

Northern Idaho ground squirrel

The Northern Idaho ground squirrel is known to occur in shallow, dry rocky meadows or shrub/grasslands usually associated with deeper, well-drained soils and surrounded by Ponderosa pine and Douglas-fir forests not normally associated with shoreline or riparian habitats. Given the diet of the Northern Idaho ground squirrel consists mainly of grass seed, stems and green, leafy vegetation and their upland habitat, the exposure of the ground squirrel to receiving waters for these facilities is unlikely or infrequent. Therefore, EPA has determined that the issuance of NPDES general permit for small placer miners in Idaho will have **no effect** on Northern Idaho ground squirrels.

Selkirk Woodland caribou

Since the 1960s, the woodland caribou population has restricted its range to the Selkirk Mountains of northeastern Washington, northern Idaho and southeastern British Columbia. Woodland caribou are generally found on moderate slopes above 4,000 feet elevation in the Selkirk Mountains in Englemann spruce/subalpine fir and western red cedar/western hemlock forest types. The limited range of the woodland caribou is outside of the action area of the facilities covered in this permit. Since this species is not likely to occur in the action area covered under these permits, EPA has determined that the NPDES general permit for small placer miners in Idaho will have **no effect** on the woodland caribou.

MacFarlane=s four-o=clock

MacFarlane=s four-o=clock is a terrestrial plant species that occurs only in a limited geographic area associated with Hells Canyon in Idaho. Most individual plants of this species occur in uplands located in river canyon grasslands on dry open slopes with well drained soils. There are no small placer locations in such uplands. Therefore, the EPA has determined that issuance of

NPDES general permit for small placer miners in Idaho will have **no effect** on the MacFarlane=s four-o=clock.

Ute ladies=-tresses

Ute ladies= tresses is a perennial, terrestrial orchid endemic to mesic or wet meadows and riparian/wetland habitats near springs, seeps, lakes, or perennial streams. Soils may be inundated early in the growing season, normally becoming drier but retaining subsurface moisture through the season. Grazing and recreational use appear to be the most likely activities affecting the plant. Adequate data are not available; however, to determine what, if any, activities are affecting this species along the main stem Snake River. It is generally believed that any activity that degrades floodplain riparian or wetland habitats will also affect Ute ladies= tresses (57 FR 2053). Exposure to waterborne pollutants from point sources, such as small placer mines, is expected to be limited in duration and infrequent during spring time high flows of the river into the floodplain. Therefore, the EPA has determined that issuance of NPDES general permit for small placer miners in Idaho will have **no effect** on Ute ladies=-tresses.

Slickspot peppergrass

Slickspot peppergrass is a small annual or biennial plant in the mustard family that occurs only in sagebrush-steppe habitats in southwestern Idaho, including the Snake River Plain, Owyhee Plateau and adjacent foothills. Slickspot peppergrass typically grows in sagebrush areas on microsites known as "slickspots". These microsites are often lower than the surrounding areas and retain water longer than the surrounding soils. Slickspot peppergrass has been found in Ada, Canyon, Gem, Elmore, Payette and Owyhee counties. Twenty-eight of the 88 known or historic slickspot peppergrass occurrences are found either wholly or partially on private lands. The remaining occurrences are found on Federal land managed by the Bureau of Land Management (BLM) or the Department of Defense. Due to the fact that the slickspot habitat is in sagebrush steppe habitat and tends to occur away from riverine areas and most of the known slickspot peppergrass habitat occurs on private or federal land, impacts to slickspot peppergrass from small placer miners would not be expected to occur. Therefore, EPA has determined that issuance of the NPDES general permit for small placer miners in Idaho will have **no effect** on slickspot peppergrass.

Spalding's catchfly

Spalding=s catchfly is a terrestrial plant species that occurs on open grasslands and deep-soiled valley/foothill areas. These species occur in uplands that would never or very rarely be exposed to flood waters from streams receiving discharges from small placer mines. Therefore, the EPA has determined that issuance of the NPDES general permit for small placer miners in Idaho will have **no effect** on the Spalding=s catchfly.

Water Howellia

Water howellia is an annual aquatic plant that completes its entire life cycle in one growing season. The plant roots in bottom sediments of low-elevation ponds or sloughs. Only one site of water howellia is known in Idaho. Most sites containing water howellia are less than 1 acre in size. The potential for one of these species occurring in close proximity to an existing small placer mine would be small. Therefore, EPA has determined that issuance of NPDES general permit for small placer miners in Idaho will have **no effect** on water howellia.

Yellow-billed cuckoo

This species is primarily found in riparian areas. In Idaho, the yellow-billed cuckoo is considered a rare visitor to the Snake River Valley. It is unlikely that existing or future small placer mines would occur in habitats used by the yellow-billed cuckoo. Therefore, EPA has determined that the NPDES general permit for small placer miners in Idaho will have **no effect** on the yellow-billed cuckoo.

Southern Idaho ground squirrel

This species spends much of its time underground and the few months it is above ground it feeds on grass seed, stems and leafy vegetables. Currently, the southern Idaho ground squirrel only occurs in Gem, Payette and Washington Counties. The southern Idaho ground squirrel resides in lower-elevation, sagebrush/grassland habitat. Given the diet of the Southern Idaho ground squirrel consists mainly of grass seed, stems and green, leafy vegetation and their sagebrush/grassland habitat, the exposure of the ground squirrel to surface waters that may be impacted by these facilities is unlikely or infrequent. Therefore, EPA has determined that the NPDES general permit for small placer miners in Idaho will have **no effect** on the Southern Idaho ground squirrel.

Columbia spotted frog

The Columbia spotted frog lives in spring seeps, meadows, marshes, ponds and streams with abundant vegetation. In Idaho the Columbia spotted frog occurs in mid-elevation of Owyhee uplands and southern Twin Falls County. It is unlikely that existing or future small placer mines would occur in habitats used by the Columbia Basin population of spotted frogs. Therefore, EPA has determined that the NPDES general permit for small placer miners in Idaho will have **no effect** on the Columbia spotted frog.

Goose Creek milkvetch

Goose Creek milkvetch is a low-growing, matted perennial forb in the pea or legume family. This species of milkvetch is only found in tuffaceous or ashy soils near Goose Creek drainage in Cassia County, Idaho. Goose Creek drainage is closed to all Idaho small placer miners for the entire year. Therefore, EPA has determined that the NPDES general permit for small placer miners in Idaho will have **no effect** on the Goose Creek milkvetch.

Christ's paintbrush

This species grows in moist, gently sloping subalpine meadows. In Idaho, Christ's paintbrush is only found on lands managed by Sawtooth National Forrest in high elevations of the Albion

Mountains in Cassia County, Idaho. Since there are no facilities expected to be covered under this permit in that area, EPA has determined that the NPDES general permit for small placer miners in Idaho will have **no effect** on Christ's paintbrush.

SECTION 3.0 DESCRIPTION OF ACTION

The federal action that is the subject of this BE is the issuance of a general NPDES permit for small placer miners in Idaho. This section of the BE includes a general overview of the proposed action, a discussion on the permit status, a description of the treatment process, a description of the outfalls, and a discussion of the proposed effluent limits in the permit.

3.1 Overview of Federal Regulations

Section 7(a) of the Endangered Species Act ("ESA"), 16 U.S.C. Section 1536(a), requires that each federal agency: in consultation with the U.S. Fish and Wildlife Service (US FWS) and National Marine Fisheries Service (NMFS)(Services) insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species or to result in the destruction or adverse modification of any designated critical habitat of each such species (Section 7(a)(2)); and confer with the Service on any agency action that is likely to jeopardize the continued existence of any species that is proposed for listing or result in the destruction or adverse modification of any critical habitat proposed to be designated for any such species (Section 7(a)(4)).

A biological evaluation provides an analysis of the potential effects of a proposed federal agency action on any proposed and listed species or the designated critical habitat of any such species based on the best scientific or commercial information available. This biological evaluation has been prepared to assist the U.S. Environmental Protection Agency, Region 10 (EPA or Agency) in carrying out their activities pursuant to ESA Sections 7(a)(2) and 7(a)(4) as they pertain to EPA's proposed Small Placer Miners in Idaho NPDES General Permit. The ESA requires federal agencies to review their actions as they apply to proposed and listed species. In this evaluation, the EPA has included candidate species as well.

Section 305(b) of the Magnuson-Stevens Act [16 USC 1855(b)] requires federal agencies to consult with NMFS when any activity proposed to be permitted, funded, or undertaken by a federal agency may have an adverse effect on designated Essential Fish Habitat (EFH) as defined by the Act. The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

The EFH guidelines further interpret the EFH definition as:

- Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate

- substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities

- necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem

- and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle.

EPA is providing NMFS with copies of the draft GP and fact sheet during the public notice period. Comments received from NMFS regarding EFH will be considered prior to reissuance of this permit. The Pacific Fishery Management Council (PFMC) designated EFH for groundfish (PFMC 1998a), coastal pelagic species (PFMC 1998b), and Chinook salmon, coho salmon, and Puget Sound pink salmon (PFMC 2000). The proposed action area for this consultation includes waters of the United States occurring downstream from small placer mining facilities in Idaho that are covered under this permit. The action area includes areas designated as EFH for various life-history stages of Snake River Chinook salmon. The effects of the proposed action on EFH are largely water quality related due to temporary increases in sediment and turbidity.

In streams where suction dredging occurs, the most critical life stage for salmon is the egg stage. The GP prohibits suction dredging in locations where fish are spawning or where fish eggs or alevins are known to exist. The GP is unlikely to be used during the critical phase. Recreational dredge mining is regulated in Idaho by the Stream Channel Protection Act. This statute requires dredge miners to apply for a general permit and consult with the Idaho Department of Water Resources before any recreational dredge mining can be done. State regulations also specify the streams where recreational dredging is prohibited. The EPA has determined that no adverse impact to EFH would result from the issuance of this permit.

Effluent limitations and Best Management Practices (BMPs) have been incorporated into the draft permit based on criteria considered to be protective of overall water quality in Idaho. Any comments received from NMFS regarding EFH will be considered prior to final issuance of the BE.

3.2 Overview of Permit Action

Section 301(a) of the Clean Water Act (CWA) provides that the discharge of pollutants to surface waters of the United States is unlawful except in accordance with an NPDES permit. EPA's regulations authorize the issuance of general NPDES permits to categories of discharges when a number of point sources discharge:

- The same or substantially similar types of operations;
- The same type of waste/pollutants;
- Within a geographic area;
- Require the same effluent limitations;
- Require the same or similar monitoring requirements; and
- In the opinion of EPA, small suction dredge placer miner operations are more appropriately controlled under a general permit than under individual permits [40 CFR § 122.28].

The EPA has determined that the owners and operators of small placer mining equipment described in Part I of the draft general NPDES permit IDG-37-0000 are authorized to discharge water from small placer miner operations to the waters of the United States described in the permit, in accordance with effluent limitations, monitoring requirements and other conditions set forth in the permit. The number of small placer miners covered under this permit will be determined by the number of NOIs submitted, however a list of 979 potential permittees based on the Idaho Department of Water Resources (IDWR) previous recreational placer miner permit applicants. This list includes the waterbodies that have been previously permitted and is provided in Appendix A of the Biological Evaluation. The permit will expire five years after the effective date of the permit.

EPA has determined that the general permit for small placer miner operations will contain the minimum limitations and requirements for authorization to discharge pollutants from this type of operation. These minimum requirements include water-quality based effluent limits, and implementation of BMPs.

The Director may require any person authorized by a general permit to apply for and obtain an individual permit, or any interested person may petition the Director to take this action. The Director may consider the issuance of an individual permit when:

a. The single discharge or the cumulative number of discharges is/are a significant contributor of pollution;

b. The discharger is not in compliance with the terms and conditions of the general permit;

c. A change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the point source;

d. Effluent limitations guidelines are subsequently promulgated for the point sources covered by the general permit;

e. A Water Quality Management Plan containing requirements applicable to such point sources is approved.

f. Circumstances have changed since the time of the request to be covered so that the discharger is no longer appropriately controlled under the general permit, or either a temporary or permanent reduction or elimination of the authorized discharge is necessary

Individual NPDES permits for Idaho small placer miner operations will require a Spill Prevention Control and Countermeasures Plan if the facility meets the requirements for a plan. Also, individual permits would evaluate water quality standards, monitoring requirements and reporting requirements on a site-by-site basis.

3.3 Operations covered by the Permit

EPA is proposing to issue a general NPDES permit for the discharge from small placer mining operations that meet the eligibility criteria in this permit.

Placer mining involves the mining and extraction of gold or other heavy metals and minerals primarily from alluvial deposits. These deposits may be in existing stream beds or ancient, often buried, stream deposits, i.e. paleo or fossil placers. Many placer deposits consist of unconsolidated clay, sand, gravel, cobble and boulders that contain very small amounts of native gold or other precious metals. Most are stream deposits that occur along present stream valleys or on benches or terraces above existing streams.

Dredging systems are classified as hydraulic or mechanical (including bucket dredging), depending on the methods of digging. Suction dredges, the most common hydraulic dredging system, are quite popular in Idaho with the small and recreational gold placer miner. Like all floating dredges, suction dredges consist of a supporting hull with a mining control system, excavating and lifting mechanism, gold recovery circuits, and waste disposal system. All floating dredges are designed to work as a unit to dig, classify, beneficiate ores and dispose of waste. Because suction dredges work the stream bed rather than stream banks, the discharge from suction dredges consists totally of stream water and bed material.

Suction dredges generally use water pumps driven by gasoline-powered engines. The pump creates suction in a flexible intake pipe 2 inches in diameter or greater. The suction created in the intake pipe vacuums the streambed sediment, gravel, smaller rocks, and any included gold into a sluice, or header, box. The sluice box is a device that channels the water, along with the vacuumed material, over small ridges that create numerous little pockets of slow or slack water where the gold drops out and is captured in a grooved board, strip of carpet, or other feature designed to hold it in place. The water, silt, gravel and other lighter material flows through the sluice box and back into the stream. The gravel is usually deposited in a pile at the mouth of the sluice box. The dredge engine, pump, and sluice box are all mounted on a floating platform tethered over the work area.

Dredge operators study the river or stream looking for "dead" or "slack" water where gold is most likely to have dropped out of the moving water column. Testing begins once a likely area is identified. Testing consists of dredging small sample holes down to bedrock or until a hard pack layer is reached. Gold is sought in the sediments, on the bedrock, or within cracks in the bedrock. The size of the sample holes is kept as small as possible: usually only big enough to reach bedrock or compact sediment layer, moving the least material necessary.

The GP authorizes placer mining by suction dredges with intake nozzles less than or equal to 5 inches and equipment rated to 15 horsepower or less, and non-powered sluice equipment moving less than 50,000 cubic yards per year.

3.4 Receiving waters covered by the Permit

The permit authorizes discharges of specified pollutants to the waters of the United States in Idaho except those waters excluded from coverage as protected, special, at-risk or degraded water resources (see Appendix B of the permit). In general, the permit authorizes small suction dredge placer mining operations to discharge stream water and bed material which are immediately released back into the receiving waters of rivers, lakes and streams.

Appendix C of the permit contains a listing of "Areas of Coverage/Areas of Closure". This listing identifies the stream reaches, and seasons, where recreational dredging and power sluicing is permitted if the operator obtains a recreational dredging permit.

3.5 Receiving waters not authorized by the Permit

The following are the receiving waters excluded from coverage, i.e., this GP does not authorize the discharge from placer mining in the water bodies described below.

National Protected Areas: The draft GP does not apply to facilities that are proposed to be located in National Parks System Units (i.e., Parks and Preserves), National Monuments, National Sanctuaries, National Wildlife Refuges, National Conservation Areas, National Wilderness Areas, or National Critical Habitat Areas.

National Wild and Scenic Rivers: Pursuant to the authorities specified in Section 47-1323, Idaho Code, the State Board of Land Commissioners prohibits dredge mining in any form from water bodies making up part of the National Wild and Scenic Rivers System. This includes the following water bodies: Middle Fork of the Clearwater River, Middle Fork of the Salmon River, and St. Joe River.

Appendix C of the GP, Part 1 provides specific details on the prohibited waterbodies.

Withdrawn River Segments: Pursuant to the authorities specified in Section 58-104(a) and 47-702, Idaho Code, the State Board of Land Commissioners has prohibited recreational dredge and placer mining in certain segments of the following rivers: Boise River, Payette River, Priest River, Salmon River, and Snake River.

Appendix C of the GP, Part 2 provides the complete list of specific withdrawn river segments that are closed to placer mining.

State Protected Rivers: Pursuant to the authorities specified in Section 42-1734A, Idaho Code and adopted by the Idaho Water Resource Board, certain waterways and/or stream segments are protected as either a State Natural River or as a State Recreational River with recreational dredge or placer mining prohibited.

Suction dredge mining is prohibited in portions of the following water bodies: Priest River Drainage, Payette River Drainage, Boise River Drainage, Snake River Drainage, Henry's Fork Snake River Drainage, South Fork Snake River Drainage, North Fork Clearwater River Drainage, and Main Salmon River Drainage.

Appendix C of the GP, Part 3 provides a complete list of the segments of State Protected Rivers where placer mining is prohibited.

Water Quality Limited Segments: A water quality limited segment is any waterbody, or definable portion of a waterbody, where it is known that the water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards. Under 303(d) of the CWA, states must identify and list water quality limited segments.

Section 303(d) requires states to develop a Total Maximum Daily Load (TMDL) management plan for impaired waterbodies on the list. A TMDL is a mechanism for estimating the assimilative capacity of a water body and allocating the capacity between point and nonpoint sources.

There are many waterbodies identified on the State of Idaho's 303(d) list as water quality limited for sediments. This permit does not authorize discharges from placer mining operations in these waterbodies, unless there is a TMDL that specifies waste load allocations for placer mining activities. Currently the only sediment TMDL that specifies allocations for placer mining is the South Fork Clearwater TMDL.

Appendix C of the Permit, Part 4 contains a current list of segments that are water quality limited for sediment as of December 2008 and are therefore not included in the coverage area of this GP. IDEQ may be updating this list during the duration of this GP. Because this general permit does not relieve a permittee of the requirements of other applicable federal, state or local laws, it is the responsibility of the permittee to contact IDEQ for the most up-to-date list. Pages 2 and 3 of this Fact Sheet and page 25 of the draft GP contain contact information.

Appendix B of the GP contains a listing of "Waterbodies Where Placer Mining Is Not Authorized Under The General Permit". Operation of a recreational dredge on these river segments is specifically not authorized under this permit.

3.6 Permit Requirements

In establishing permit limits, EPA first determines which technology-based limits apply to the discharges in accordance with national effluent guidelines and standards. EPA then determines which water quality-based limits apply to the discharges based upon an assessment of the pollutants discharge and a review of state water quality standards. The effluent limit for a particular pollutant is the more stringent of the technology-based effluent limit or the water quality-based effluent limit.

3.6.1 Technology-based Effluent Limitations

Pursuant to Section 402(a)(2) of the Act and 40 CFR 122.44(k)(2), BMPs are being proposed in the permit. Suction dredging's unique method of intake and displacement present unusual permitting issues. As discussed above, a suction dredge is a mechanical device that floats on the stream surface and pumps stream water and stream bed material through a suction intake conduit to a sluice box from which gold or other minerals may be recovered. The discharge from suction dredges consists totally of stream water and bed material immediately released back into the receiving water. The BMPs in the permit are being proposed because technology-based numeric effluent limitations are not feasible.

3.6.2 Water quality-based Effluent Limitations

Section 301(b)(1) of the Act requires the establishment of limitations in permits necessary to meet water quality standards by July 1, 1977. All discharges to state waters must comply with state and local coastal management plans as well as with state water quality standards, including the State's anti-degradation policy. Discharges to state waters must also comply with limitations imposed by the state as part of its certification of NPDES permits under § 401 of the Act.

The NPDES regulations at 40 CFR 122.44(d)(1) require that permits include water quality-based limits that "Achieve water quality standards established under § 303 of the CWA, including State narrative criteria for water quality."

EPA has determined that turbidity is a pollutant of concern. Required turbidity monitoring is designed to ensure that the BMPs are being implemented properly. The draft GP requires a daily visual inspection for turbidity of the area within 500 feet downstream of the suction dredge during operation. A visual increase in turbidity (any cloudiness or mudiness) above background turbidity 500 ft. downstream of the suction dredge during operations is considered a violation of this permit. This also includes any turbidity that may result from any other part of the operation. If turbidity is observed beyond 500 feet, the draft GP requires the permittee to modify the operation to meet the permit limitation. If the operation cannot be modified to meet the limit, the operation is not authorized. In most cases, water quality recovers rapidly. The daily inspection during operation, combined with the BMPs will assure that the water quality standards are met.

A copy of the draft GP is included in Attachment 2 of this BE. The GP will be finalized following completion of this consultation..

3.6.3 Monitoring Requirements

Compliance with Idaho Department of Water Resource's (IDWR's) Stream Channel Permit is regarded as adequate monitoring for suction dredge facilities. Suction dredge operators shall visually monitor for turbidity at least once per day of operation. Individuals who conduct visual monitoring shall observe the turbidity plume, where visible, immediately downstream or radially from the dredge until the turbidity plume is no longer visible and note the distance.

There is no need to conduct more extensive monitoring if the turbidity plume blends with the background at a distance of less than 500 feet.

All turbidity monitoring results shall be recorded daily. The permittee shall maintain records of all information resulting from any visual inspections. Visual violation occurrences will be reported to the EPA NPDES Compliance Unit along with the measures taken to comply with the provisions of the GP.

3.6.4 Best Management Practices

BMPs are measures that are intended to prevent or minimize the generation and the potential for the release of pollutants from industrial facilities to the waters of the United States through normal operations and ancillary activities. Pursuant to Section 402(a)(1) of the CWA, development and implementation of BMP Plans may be included as a condition in NPDES permits. Section 402(a)(1) authorizes EPA to include miscellaneous requirements that are deemed necessary to carry out the provision of the Act in permits on a case-by case basis. BMPs are required to control or abate the discharge of pollutants in accordance with 40 CFR § 122.44(k). The proposed permit requires compliance with the following BMPs:

A. Dredging of concentrated silt and clay should be avoided.

The Permittee shall use reasonable care to avoid dredging silt and clay materials that would result in a significant increase in turbidity. Reasonable care includes moving the dredge to a new location or reducing the volume of effluent discharge by limiting operation speed of the suction dredge.

This practice will decrease the amount of fine material that will be released into the water that could cause turbidity plumes in excess of the permitted distance.

B. If mercury is found during suction dredge operation, (i.e. mercury is collected in the sluice box), the operator must:

1) Stop dredging immediately;

2) Contact the local regional office of IDEQ (see page 3 for contact information);

3) Keep the mercury collected, do not remobilize the collected mercury; and

4) Work with the appropriate regional office of IDEQ to dispose of the mercury properly.

Mercury was used in historic placer mining operations to amalgamate gold fines. Elemental mercury may be present in stream beds and banks and if remobilized can result in impacts to fish and other aquatic life. Placer miners encountering mercury should take above steps to prevent mercury from reentering the water body.

C. Suction dredges shall not operate within 800 feet of:

1) another suction dredging operation occurring simultaneously or,

2) a location where it is apparent that another operation has taken place within the past month

This practice should ensure that the mixing zone of a facility does not overlap with that of another since 800 feet is the distance of a 500 foot mixing zone for each operation plus a designated 300 foot buffer before the next suction dredge would impact water quality.

A study conducted by the EPA on the Fortymile River in Alaska found turbidity and total filterable solids were substantially elevated downstream of the dredge, although it was spatially confined to within 525 ft of the dredge and was restricted to the portion of those days that the dredge was operating (EPA 1999).

D. Dredging and discharging are prohibited within 500 feet of locations where:

1) fish are spawning or

2) fish eggs or alevins are known to exist at the time dredging occurs

In addition: Suction dredge operation must not occur in gravel bar areas at the tail of pools or where operations result in fine sediments discharging onto gravel bars.

This BMP is designed to minimize impacts to fish spawning and spawning habitat.

E. Suction dredge operation must not change the stream channel way that directs the flow of water into a stream bank, which may cause bank erosion or destruction of the natural form of the stream channel.

Under Section 101 of the Clean Water Act, EPA is required to restore and maintain the chemical, physical and biological integrity of waters of the United States. Protection of the physical integrity of waterbodies includes protection of habitat

F. Suction dredge operation that results in undercutting, littoral channeling, stream bank or beach erosion, is prohibited.

This practice will ensure that erosion does not occur and that the finer sediments that may be found in these areas do not cause excessive turbidity in the receiving waters.

G. Damming or diversions within a stream channel are prohibited under this GP.

EPA cannot authorize dams or diversions under Section 402 of the CWA. These are generally authorized under Section 404 of the CWA which is administered by the U.S. Army Corps of Engineers.

H. Explosives, motorized winches or other motorized equipment to move boulders, logs, or other natural obstructions are prohibited under this GP.

This practice should ensure that important habitat which includes large organic debris and large boulders in these areas will not be destroyed.

I. Wheeled or tracked equipment used in-stream is prohibited while dredging is in progress.

This practice should minimize turbidity from sources other than the suction dredge.

J. Care shall be taken by the operator during refueling of equipment to prevent spillage.

Any spills shall be cleaned up using materials such as sorbent pads and booms.

All spills shall be reported immediately or as soon as practical to IDEQ and the National Response Center at 1-800-424-8802.

All chemical or petroleum products shall be stored in a safe and secure location at all times. Fuel not stored and dispensed with an ANSO or UL approved safety container must be maintained not less than 100 feet from the mean high water mark.

This practice will decrease the potential for contamination of surface water by petroleum products.

SECTION 4 DESCRIPTION OF ACTION AREA

Since the proposed action is an issuance of the NPDES permit, the direct effects are those that would cause toxicity to a listed species from individual and combined pollutant concentrations within the action area. The presence of parameters regulated by the permit could potentially be present at a concentration that could cause toxicity to a listed species at different distances downstream from the discharge, depending upon the effluent limit, available dilution from the river, and the physical and chemical characteristics of the parameter.

The area where direct effects may occur commences at the point of discharge. Therefore, the action area is bounded on the upper end at the outfall. The action area downstream for a specific parameter depends on the physical and chemical properties that cause it to degrade or dilute as it travels downstream. A parameter that is highly volatile or readily biodegradable in a river may be present over a relatively small downstream area at a concentration that could potentially cause toxicity, because several mechanisms effectively remove the parameter from the river. On the other hand, a parameter that is persistent in the environment and is not readily biodegraded in a river system might be present over a longer downstream distance at a concentration that could potentially cause toxicity because removal mechanisms are less effective in eliminating this parameter from the river.

Indirect effects for the proposed action are those that would cause an effect to a listed species or habitat from individual and/or combined pollutant concentrations within the waterbody at a later time. These effects would result from delayed exposure (e.g., uptake of deposited effluent constituents from sediment resuspension), consumption of prey species, and habitat modification (e.g., deposited effluent constituents on the riverbed, decrease in photosynthesis). Any of these indirect effects could occur as long as there is influence on the receiving water column and sediment quality from the discharge. Therefore, the indirect action area extends to the point downstream where an indirect adverse effect could occur (e.g., where the concentration of a parameter in the sediment resulting from the effluent discharge is high enough to cause an adverse effect to threatened and endangered fish species).

The action area of coverage for the GP is located within all waterbodies of Idaho downstream of the facilities covered by the GP.

4.1 Biological Requirements in the Action Area

The biological requirements of ESA-listed species can be considered, at a minimum, to be met if the species have access to critical habitat. Critical habitat is defined under Section 3 of the ESA as "the specific areas within the geographic area occupied by a federally listed species on which are found physical and biological features essential to the conservation of the species, and that may require special management considerations or protection." Of the species that are evaluated in this BE, six species, anadromous steelhead trout, bull trout, Snake River sockeye salmon, and fall and spring/summer run Chinook salmon, have critical habitat designated within the action area.

4.2 Environmental Baseline

There are over 115,000 thousand miles of rivers, streams and creeks in Idaho. Idaho reports that 52% of river and stream miles support aquatic life. Based on the state's 2008 Section 303(d) list, the major causes of impairment in Idaho's rivers and streams include siltation, nutrients, flow alterations, thermal modifications, and bacteria. Most of Idaho's rivers and streams flow into one of five major river basins; the Snake, the Clearwater, the Salmon, the Bear, and the St. Joe.

Since the BE covers impacts from small placer miners discharging into surface waters, only information on surface water quality was used in describing the environmental baseline for this BE.

Additional information on baseline environmental conditions within the State of Idaho was obtained from Idaho's *2008 Integrated 303(d)/305(b) Report* published by DEQ in 2008. Every two years, DEQ is required by the federal Clean Water Act to conduct a comprehensive analysis of state water bodies to determine whether they meet state water quality standards or if additional pollution controls are needed to meet beneficial uses.

Assessed water bodies are designated in the 2008 *Integrated 303(d)/305(b) Report* as either supporting or not supporting water quality standards and beneficial uses. Water bodies that do not meet water quality standards are called "water quality limited" or "impaired," and require development of water quality management plans known as Total Maximum Daily Loads (TMDLs) to bring them back into compliance and protect their beneficial uses. Water bodies previously designated impaired that now meet water quality standards are removed from the water quality limited list.

4.3 Water Quality

According to Idaho DEQ, there is approximately 115,595 miles of water in Idaho, of which more than half (60,245 miles or 52 percent) have been monitored and assessed (DEQ 2008). Approximately 26,000 miles of streams monitored and assessed during this cycle were found to meet water quality standards. The proportion of streams meeting their beneficial uses is increasing. The number of miles of water quality limited or impaired streams comprise a total of 34,175 miles compared to 21,000 in 2003, according to DEQ (IDEQ2003, 2008). Of those water assessed in the most recent listing cycle, 43 percent met water quality standards. It is estimated that twenty percent of all waters in the state are deemed to meet water quality standards and their beneficial uses (DEQ 2003).

Approximately 13,000 miles of TMDLs submitted to EPA have been approved (IDEQ 2008). In 2003, because flow and habitat are not considered pollutants under the Clean Water Act and do not require a TMDL, 4,609 miles of streams were removed from those needing TMDLs because they were listed for flow and/or habitat alternation (IDEQ 2003). During the most recent listing cycle, 207 assessment units were added for temperature violations. However, many of these may be due to natural background. Further study may find some of these are not water quality limited.

According to the 2008 report, 17,060 miles of rivers and streams are threatened or impaired due to sediment. This comprises 28% of the total miles assessed and 50% of the total impaired miles. Approximately 5,338 miles of rivers and streams are impaired due to nutrients. This comprises approximately 9% of the total miles assessed and 16% of the total impaired miles. Approximately 15,293 miles are threatened or impaired due to temperature. This comprises approximately 25% of the total assessed miles and 45% of the total impaired miles. The report also states that 221.6 miles are threatened or impaired due to placer mining; which comprises less than one percent of the total assessed miles.

Forty one percent of impaired waters in Idaho have complete TMDLs, while 58% are still awaiting TMDLs and one percent of impaired waters are due to non-pollutant impairment (DEQ 2008). Of the TMDLs completed for impaired waters, more than 65 percent of the violations were due to sediment, temperature, or nutrient exceedences, while the remainder were attributable to violations for bacteria, biological impairment, organic enrichment/low dissolved oxygen, metals, pathogens, unionized ammonia, oil and grease, and other unspecified violations (DEQ 2003, 2008).

The *Idaho State of the Environment Report 2001*, published by the Idaho Department of Environmental Quality (DEQ), provides an overview of environmental conditions in Idaho and discusses environmental data collected throughout the state. According to the report, the information on the environment is to be used in subsequent investigations as "indicators" of the health of the environment. Five indicators of environmental health are used in the report:

- Air quality,
- Drinking water quality,
- Ground water quality,
- Surface water quality, and
- Areas of waste contamination

The information in the *State of the Environment Report* is presented for each of five river basins:

- Panhandle
- Clearwater
- Salmon
- Southwest
- Upper Snake/Bear River

The Upper Snake River and Bear River basins were reported as a single basin. This information is summarized in Table 3. As can be seen from the information in the table, only about 12 percent of Idaho's streams and rivers have been assessed for water quality, and of those water that have been assessed, about 60 percent are water quality limited (DEQ 2001). The three primary pollutants of concern for each of the river basins are sediments, nutrients, and temperature.

Table 3. Surface Water Quality Monitoring Information by River Basin (DEQ 2001)

Basin	Total Stream Miles	Stream Miles Assessed	Water Quality Limited (Miles)	Pollutants of Concern	Monitoring Sites
Panhandle	8,871	1,856	904	Sediments Nutrients Temperature Metals	281
Clearwater	12,674	2,064	1,078	Sediments Nutrients Temperature	246
Salmon	17,879	2,400	1,179	Sediments Nutrients Temperature	228
Southwest	22,472	4,743	2,600	Sediments Nutrients Temperature Bacteria	474
Upper Snake/ Bear River	58,385	3,457	2,930	Sediments Nutrients Temperature Bacteria Selenium	759
Total	120,281	14,520	8,691	----	1,988

SECTION 5 SPECIES DESCRIPTIONS

This section describes the threatened and endangered (T&E) species that may occur in the action area as indicated by the USFWS and NMFS. The discussion includes the life history, habitat use, and habitat concerns as well as specific information on the abundance and timing of occurrence of each species within the Action Area.

5.1 Banbury Springs Lanx (*Lanx sp.)*

The Banbury Springs lanx was first listed as endangered on December 14, 1992. This snail is a member of Lancidae, a small family of pulmonates (snails that possess lunglike organs) endemic to western North America. The species was first discovered in 1988 and has not been formally described.

5.1.1 Range of Species

This lanx was first discovered in 1988 at Banbury Springs at river mile (rm) 589, with a second colony found in nearby Box Canyon Springs at rm 588 in 1989. During 1991, a mollusc survey at The Nature Conservancy's Preserve revealed a third colony in the outflows of Thousand Springs (rm 584.6). Subsequent to this discovery, a more detailed investigation at the Preserve revealed that the single colony was sporadically distributed within an area of only 129 to 151 square feet (ft^2) (Frest and Johannes 1992). Population density ranged from 4 to 20 individuals/square inch (in^2). The total adult population at the Preserve was estimated at between 600 and 1,200. All three colonies of lanx were discovered in alcove spring complexes. These spring complexes contain large areas of adjacent, presumably identical, habitat not occupied by the species. At present, the Banbury Springs lanx is known to occur only in the largest, least disturbed spring habitats at Banbury Springs, Box Canyon Springs, and Thousand Springs.

5.1.2 Critical Habitat

No critical habitat has been designated for the Banbury Springs Lanx.

5.1.3 Life History

The species has been found only in spring-run habitats with well-oxygenated, clear, cold 59 to 61° F waters on boulder or cobble-size substrate. All known locations have relatively swift currents. They are found most often on smooth basalt and avoid surfaces with large aquatic macrophytes or filamentous green algae. The species has been reported at depths ranging from 12 to 30 inches on boulder substrate (Beak 1989). The species has been found in water as shallow as 2 inches, but depths up to 6 inches were more typical. All lancids are particularly affected by dissolved oxygen fluctuations since respiration is accomplished only through the mantle; lungs, gills, and other specialized respiratory structures are lacking (Frest and Johannes 1992).

5.1.4 Population Trends and Risks

The free-flowing, cool water environments required by these species have been impacted by and are vulnerable to continued adverse habitat modification and deteriorating water quality from one or more of the following: hydroelectric development, peak-loading effects from existing hydroelectric project operations, water withdrawal and diversions, water pollution, and inadequate regulatory mechanisms.

5.2 Bliss Rapids Snail (*Taylorconcha serpenticola*)

The Bliss Rapids snail was listed as threatened under the ESA on December 14, 1992.

5.2.1 Range of Species

The Bliss Rapids Snail was known historically from the mainstem middle Snake River and associated springs between Indian Cove Bridge (rm 525.4) and Twin Falls (rm 610.5) (Hershler et al. 1994). Based on live collections, the species currently exists as discontinuous populations within its historic range. These colonies are primarily concentrated in the Hagerman reach, in tail waters of Bliss and Lower Salmon Dams and several unpolluted springs including Thousand Springs, Banbury Springs, Box Canyon Springs and Niagara Springs.

5.2.2 Critical Habitat

No critical habitat has been designated for the Bliss Rapids snail.

5.2.3 Life History

This snail occurs on stable cobble-boulder size substrate in flowing waters of unimpounded reaches of the mainstem Snake River and in a few spring habitats in the Hagerman Valley. The species does not burrow in sediments and normally avoids surfaces with attached plants. Known river populations of the Bliss Rapids snail occur only in areas associated with spring influences or rapids-edge environments and tend to flank shorelines. They are found at varying depths if dissolved oxygen and temperature requirements persist and are found in shallow (0.5 inches) depth, permanent, cold springs (Frest and Johannes 1992). The species resides on the lateral sides and undersides of rocks during daylight. The species can be locally quite abundant, especially on smooth rock surfaces with common encrusting red algae.

5.2.4 Population Trends and Risks

The free-flowing, cool water environments required by these species have been impacted by and are vulnerable to continued adverse habitat modification and deteriorating water quality from one or more of the following: hydroelectric development, peak-loading effects from existing hydroelectric project operations, water withdrawal and diversions, water pollution, and inadequate regulatory mechanisms. Additionally, a primary reason for listing the Bliss Rapids snail as threatened in the Snake River drainage was the perceived impacts of the highly invasive New Zealand mudsnail.

5.3 Bruneau Hot Springsnail (*Pyrgulopsis bruneauensis*)

The Bruneau hot springsnail was listed as endangered under the ESA on February 24, 1993.

5.3.1 Range of Species

The Bruneau hot springsnail is found only in the springflows of Hot Creek and 128 small, flowing thermal springs and seeps along an approximately 5.3 mile length of the Bruneau River in southwestern Idaho (Mladenka 1992). A majority of occupied springsnail habitats are located along both shorelines of the Bruneau River up to 2.8 miles above its confluence with Hot Creek while the remaining sites occur up to 2.7 miles below the Hot Creek-Bruneau River confluence. Most of the springs and seeps containing springsnails are small, ranging from 1.6 ft^2 to 398 ft^2 in area, with a mean size of almost 10.8 ft^2. These spring sites are located primarily above the high-water mark of the Bruneau River and are separated by distances of less than 3.3 feet to greater than 6,562 feet (Mladenka 1992). Most of the springs along the Bruneau River upstream of Hot Creek are on lands administered by the Bureau of Land Management (BLM), while most springsnail habitats downstream of the Indian Bathtub and Hot Creek are on private land.

5.3.2 Critical Habitat

No critical habitat has been designated for the Bruneau hot springsnail.

5.3.3 Life History

The species has been found in flowing thermal springs and seeps with temperatures ranging from 60.3 to 96.3 °F (Mladenka 1992). No Bruneau hot springsnails have been collected outside thermal plumes of hot springs entering the Bruneau River. They are found in these habitats on the exposed surfaces of various substrates, including rocks, gravel, sand, mud and algal film. However, during the winter period of cold ambient temperatures and icing, the springsnails are most often located on the undersides of outflow substrates, habitats least exposed to cold temperatures. Springsnail abundance generally fluctuates seasonally; abundance is influenced primarily by water temperature, spring discharge and food availability.

Springsnails appear to be opportunistic grazers as food habit studies reveal algal genera are taken in proportions similar to those found in their habitat (Mladenka 1992). However, springsnail densities are lowest in areas of bright green algal mats, while higher snail densities occur where periphyton communities are dominated by diatoms.

Sexual maturity can occur at two months. Reproduction occurs throughout the year except when inhibited by high or low temperatures (Mladenka 1992). At sites affected by high ambient temperatures during summer and early fall months, recruitment was seasonal, corresponding with cooler periods. Likewise, sites with cooler ambient temperatures would likely exhibit recruitment during the summer months. Springsnails use "hard" surfaces such as rock substrate to deposit their eggs. They may deposit eggs on other snails' shells when other hard surfaces are unavailable.

5.3.4 Population Trends and Risks

The primary threat to this species continues to be agriculture-related ground-water withdrawal and pumping. As the Bruneau Valley Aquifer is depleted, the geo-thermal springs that are essential to the survival of this snail cease to flow and become filled with sediment. Within the past 25 years, flows from the Indian Bathtub springs have decreased, thereby restricting the springnail's habitat area and reducing its numbers. Ongoing drought conditions since the mid-1980's have resulted in increased reliance on ground water for irrigated agriculture in the Bruneau basin, causing the extent of seepage at several of the springnail's spring sources to be greatly reduced in recent years. Considerable springsnail habitat has also been lost in recent years due to sedimentation from flash flooding. In Hot Creek, approximately 1,000,000 *Pyrgulopsis bruneauensis* were estimated to occur in the "Low Indian Bathtub Hot Spring" in 1982, with as many as 60 snails/in2 observed on the wetted rockfaces surrounding Indian Bathtub (Taylor 1982). A flood event occurred in Hot Creek in July 1992 which drastically reduced *P. bruneauensis* from Hot Creek by filling much of the Indian Bathtub area with sediment (Royer and Minshall 1993), and by 1997, the population had been totally extirpated (Varricchione et al. 1997).

5.4 Bull Trout (*Salvelinus confluentus*)

The bull trout was listed as threatened under the ESA on June 10, 1998. Critical habitat for the Bull trout was designated on September 26, 2005.

5.4.1 Range of Species

Bull trout are members of the char subgroup of the family Salmonidae and are native to waters of western North America. Bull trout range throughout the Columbia River and Snake River basins, extending east to headwater streams in Montana and Idaho, into Canada, and in the Klamath River basin of south-central Oregon. The distribution of populations, however, is scattered and patchy

5.4.2 Critical Habitat

Approximately 294 stream/shoreline miles have been designated in Idaho as critical habitat for the bull trout. River basins with designated critical habitat include the Clark Fork, Kootenai, Coeur d' Alene Lake, Clearwater, Salmon, Southwest Idaho, Little Lost, Imnaha-Snake, and Hells Canyon Complex. No critical habitat has been designated for the Jarbidge River population of bull trout in Nevada and southern Idaho, where the Secretary of the Interior determined that the benefits of excluding the area outweighed the benefits of including it.

5.4.3 Life History

Bull trout and some other species are commonly referred to as ''anadromous'' (fish that can migrate from saltwater to freshwater to reproduce). Bull trout exhibit a number of life history strategies. Stream-resident bull trout complete their entire life cycle in the tributary streams where they spawn and rear. Most bull trout are migratory, spawning in tributary streams where juvenile fish usually rear from 1 to 4 years before migrating to either a larger river or lake where they spend their adult life, returning to the tributary stream to spawn. Resident and migratory forms may be found together, and either form can produce resident or migratory offspring. Bull trout can grow to more than 20 pounds in lake environments and live up to 12 years. Under exceptional circumstances, they can live more than 20 years (USFWS 2005).

5.4.4 Population Trends and Risks

Bull trout have declined due to habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, past fisheries management, and the introduction of non-native species such as brown, lake and brook trout. While bull trout occur over a large area, their distribution and abundance has declined and several local extinctions have been documented. Many of the remaining populations are small and isolated from each other, making them more susceptible to local extinctions.

5.5 Snake River Fall Chinook Salmon (*Oncorhynchus tshawytscha*)

The fall Chinook salmon was listed as threatened under the ESA on April 22, 1992. Critical Habitat was designated on December 28, 1993.

5.5.1 Range of Species

The evolutionary significant unit of fall Chinook salmon includes all naturally spawned populations of fall-run Chinook salmon in the mainstem Snake River below Hells Canyon Dam, and in the Tucannon River, Grande Ronde River, Imnaha River, Salmon River, and Clearwater River, as well as four artificial propagation programs: the Lyons Ferry Hatchery, Fall Chinook Acclimation Ponds Program, Nez Perce Tribal Hatchery, and Oxbow Hatchery fall-run Chinook hatchery programs.

5.5.2 Critical Habitat

Designated critical habitat for fall Chinook salmon in Idaho consists of river reaches of the Snake River, and all tributaries of the Snake River presently or historically accessible to Snake River spring/summer Chinook salmon (except reaches above impassable natural falls, and Dworshak and Hells Canyon dam).

5.5.3 Life History

Snake River fall-run Chinook salmon enter the Columbia River in July and August. The Snake River component of the Chinook salmon fall run migrates past the lower Snake River mainstem dams from August through November. Spawning occurs from October through early December. Juveniles emerge from the gravels in March and April of the following year. Snake River fall-run Chinook salmon exhibit an ocean-type life history pattern, with juveniles migrating downstream from their natal spawning and rearing areas from June through early fall (USFWS 2005)

5.5.4 Population Trends and Risks

It has been estimated that 55 to 90 percent of migrating smolts do not make it downstream due to hydropower facilities. These facilities may create weak water currents, warm waters, blocked migratory routes and dangerous turbines that can negatively affect the species. Habitat loss and degradation; agricultural, urban and industrial pollution; mistaken angler harvest; clearcutting, removal of streamside vegetation and livestock use; and some hatchery practices also pose threats to the fall Chinook salmon (USFWS 2005).

5.6 Snake River Spring/Summer Chinook Salmon (*Oncorhynchus tshawytscha*)

The spring/summer Chinook salmon was listed as threatened under the ESA on April 22, 1992. Critical Habitat was designated on December 28, 1993.

5.6.1 Range of Species

In general, spring-run type Chinook salmon tend to spawn in higher-elevation reaches of major Snake River tributaries in mid- through late August, and summer-run Snake River Chinook salmon spawn approximately one month later than spring-run fish. Summer-run Chinook salmon tend to spawn lower in the Snake River drainages, although their spawning areas often overlap with spring-run spawners.

5.6.2 Critical Habitat

Designated critical habitat for Spring/Summer Chinook salmon in Idaho consists of river reaches of the Snake River, and all tributaries of the Snake River (except the Clearwater River) presently or historically accessible to Snake River spring/summer Chinook salmon (except reaches above impassable natural falls and Hells Canyon Dam).

5.6.3 Life History

Spring/summer-run Chinook salmon from the Snake River basin exhibit stream-type life history characteristics. Eggs are deposited in late summer and early fall, incubate over the following winter, and hatch in late winter and early spring of the following year. Juveniles rear through the summer, overwinter, and migrate to sea in the spring of their second year of life. Depending on the tributary and the specific habitat conditions, juveniles may migrate extensively from natal reaches into alternative summer-rearing or overwintering areas. Snake River spring/summer-run Chinook salmon return to natal rivers to spawn as 4- and 5-year-old fish after 2 to 3 years in the ocean. A small fraction of the fish return as 3-year old "jacks," heavily predominated by males (USFWS, 2005).

5.6.4 Population Trends and Risks

Tributary habitat conditions vary widely among the various drainages of the Snake River basin. Habitat is degraded in many areas of the basin, reflecting the impacts of forest, grazing, and mining practices. Impacts relative to anadromous fish include lack of pools, higher water temperatures, low water flows, poor overwintering conditions, and high sediment loads. Substantial portions of the Salmon River drainage, particularly in the middle fork, are protected in wilderness areas.

5.7 Grizzly Bear (*Ursus arctos*)

The grizzly bear was listed as threatened under the ESA on July 28, 1975.

5.7.1 Range of Species

The historical range of the grizzly bear included a variety of habitats across most of North America. However, grizzly bear populations today only occupy two percent of their original range (in the lower 48 states). They are generally found in wilderness areas of Alaska, Idaho, Montana, Washington and Wyoming. The Idaho populations of grizzly bears are estimated to include 30 to 40 bears that are found in the Cabinet-Yaak Recovery Zone, the Selkirk Mountain Recovery Zone with approximately 40 to 50 bears and the Yellowstone Recovery Zone with approximately 580 bears (USFWS, 2009). On March 22, 2007, the U.S. FWS announced that the Yellowstone Distinct Population Segment (DPS) of grizzly bears was recovered, however this decision was remanded on September 21, 2009 and the threatened status was reinstated for this DPS of grizzly bear.

5.7.2 Critical Habitat

The USFWS has not designated any critical habitat for the grizzly bear.

5.7.3 Life History

A grizzly bear can stand up to nine feet tall, and adult males can weigh as much as 600 pounds. Females generally are smaller, weighing about 250 to 350 pounds. Grizzlies prefer open meadows and avalanche chutes in the spring and timberlands with berry bushes in late summer and fall. The bear will forage for wild fruits, nuts, bulbs and roots, and it has been known to tear rotten logs apart and overturn heavy stones in search of insects and larvae. Using its powerful sense of smell, the grizzly finds carcasses of elk, deer and cattle to feed upon. Huge amounts of food are consumed by the bear to build enough fat to sustain it through a long winter hibernation period from November through April with no water nourishment.

Bears begin searching for their ideal den in early fall. Females produce an average of two cubs every three years, and they stay with their young cubs for about two years. In Idaho, grizzly bear range averages 200 to 300 square miles.

5.7.4 Population Trends and Risks

Grizzlies were almost extirpated from America's wildlands after more than a century of unregulated killing. Habitat loss and low reproductive rates continue to affect grizzly bear numbers in Idaho.

5.8 Kootenai River White Sturgeon (*Acipenser transmontanus*)

The Kootenai River population of white sturgeon was listed as endangered under the ESA on September 6, 1994. Critical habitat was revised on July 9, 2008.

5.8.1 Range of Species

Being one of 18 land locked populations of white sturgeon found in the Pacific Northwest, the Kootenai River population of white sturgeon has a distribution extending from Montana to British Columbia. Specifically their distribution extends from Kootenai Falls, Montana, located 31 river-miles below Libby Dam, downstream through Kootenay Lake to Corra Linn Dam on the lower West Arm of Kootenay Lake, British Columbia (USFWS 1999).

5.8.2 Critical Habitat

The USFWS designated approximately 18.3 river miles of the Kootenai River as critical habitat for the Kootenai River White Sturgeon. Critical habitat is currently designated in the braided reach from RM 159.7 below the confluence with the Moyie River, downstream to RM 152.7 at Bonners Ferry and continues downstream into the meander reach to RM 141.4 (71 FR 6383).

5.8.3 Life History

White sturgeon in general are a long lived species with females living from 34-70 years with some individuals approaching 100 years (PSMFC 2008). Kootenai sturgeon reach sexual maturity at 28 and 30 years, respectively, for males and females (Paragamian 2005). Historically, prior to construction of the Libby Dam, spawning areas for white sturgeon were not specifically known. From 1990 to 1998 monitoring programs were conducted that discovered white sturgeon spawning areas within a 12-mile reach of the Kootenai River, primarily from Bonners Ferry, Idaho downstream to the lower end of Shorty's Island (USFWS 1999).

Historically, spring runoff and warming water temperatures triggered the movement of white sturgeon upstream to the spawning areas and their preparation physiologically for spawning. White sturgeon spawn in fast-flowing water and water velocity acts as a clue for spawning. Water depth also appears to be an important factor in spawning site selection for the Kootenai sturgeon. White sturgeon usually broadcast their eggs over clean cobble at depths greater than 20 feet at column velocities greater than 0.8 meters per second. Kootenai sturgeon spawn within a fairly narrow range of water temperatures, from 47.3 to 53.6° F (Paragamian et al. 2002).

Females are reported to spawn at 4 to 6 year intervals (USFWS 2008). The last significant sturgeon recruitment in the Kootenai River occurred in 1974, prior to the Libby Dam becoming operational (Partridge 1983). Recruitment failure is largely attributed to the spawning of Kootenai sturgeon over unsuitable sandy substrates (Paragamian et al. 2001). Based on data from 1992 through 2001, it is estimated that on average a total of only about 10 juvenile sturgeon currently may be naturally produced annually in the Kootenai River.

5.8.4 Population Trends and Risks

The number of Kootenai sturgeon has decreased from approximately 7,000 individuals in the 1970s to fewer than an estimated 500 adults in 2005. It is projected that fewer than 30 females will be spawning annually after the year 2015 (Paragamian 2005).

Successful reproduction is dependent upon Kootenai sturgeon spawning at sites where the eggs can settle in an area that supports their viability, and where the embryos have appropriate habitat for development and protection from predators, which includes rocky substrates for spawning and attachment of eggs. The braided reach consists of multiple shallow channels over gravel and cobble and the meander reach is characterized as sandy substrate with low water velocities and deep holes which is frequented by sturgeon in spawning condition. Shallow waters have occurred in the braided reach following construction of the Libby Dam and this suggests a possible behavioral barrier to migration into the upstream canyon reach, where suitable spawning and incubation habitat appears to exist.

The Kootenai River population of white sturgeon is considered to be at risk due to the following factors:

- Hydropower operations, including decreased discharges resulting in less spawning habitat (NBS 2005).
- Flood control operations;
- Poor recruitment;
- Loss of habitat; and
- Possibly contaminants affecting the water quality of their habitat (USFWS 1999).

5.9 Snake River Physa Snail (*Talorconcha serpenticola*)

The Snake River physa snail was listed as endangered under the ESA on December 14, 1992.

5.9.1 Range of Species

From 1956 through 1985 collections of the Snake River physa snail have been made from Grandview upstream through the Hagerman Reach. This is considered the 'modern' historic range for this species. Today, two populations are believed to remain in the Hagerman and King Hill reaches, with potentially a third colony located immediately downstream of Minidoka Dam (USFWS 1995).

5.9.2 Critical Habitat

The USFWS has not designated any critical habitat for the Snake River physa snail.

5.9.3 Life History

The Snake River physa snails occur in swift current of mainstem rivers on the underside of gravel to boulder size substrates. Specimens have been found living at the margin of rapids at the deepest accessible part of the river. It is believed that these snails are restricted to moving waters of relatively good quality. This species likely lives for up to or just over one year based on the life histories of other physid species.

5.9.4 Population Trends and Risks

The factors that are threatening the Snake River physa snail include habitat destruction as a result of dam construction and the formation of reservoirs and habitat deterioration as a result of reduced water quality. Both factors lead to habitat fragmentation and eventually the isolation of smaller populations which makes them more vulnerable to environmental changes and fluctuations in population cycles. An additional threat comes from the presence of the New Zealand mudsnail (*Potamopyrgus antipodarum*) that competes directly with the Snake River physa snail for habitat in the mainstem Snake River (USFWS 1995).

5.10 Snake River Sockeye Salmon (*Oncorhynchus nerka*)

The Snake River sockeye salmon was listed as endangered under the ESA on November 20, 1991 and reaffirmed on June 28, 2005. A final designation for critical habitat was published on December 28, 1993.

5.10.1 Range of Species

Numbers of Snake River sockeye salmon have declined dramatically over the years. In Idaho, only the lakes of the upper Salmon River (Stanley Basin) remain as potential sources of production. Historically, five Stanley Basin lakes (Redfish, Alturas, Pettit, Stanley, and Yellow Belly lakes) supported sockeye salmon (Bjornn et al. 1968). Currently, only Redfish Lake receives a remnant anadromous run. The Stanley Basin lakes are located within the Sawtooth National Recreation Area. Basin lakes are glacial-carved and receive runoff from the east side of the Sawtooth and Smoky mountains. All Basin lakes drain to the upper Salmon River which flows into the Snake River and ultimately the Columbia River. Redfish Lake is located approximately 1,450 river kilometers from the confluence of the Columbia River with the Pacific Ocean.

5.10.2 Critical Habitat

The USFWS designated critical habitat for sockeye salmon on December 28, 1993. Critical habitat for the Snake River sockeye salmon consists of river reaches of the Columbia, Snake, and Salmon Rivers, Alturas Lake Creek, Valley Creek, and Stanley, Redfish, Yellow Belly, Pettit, and Alturas Lakes (including their inlet and outlet creeks).

5.10.3 Life History

Sockeye salmon spawn in North America from the Columbia River in Oregon north to the Noatak River in Alaska; and in Asia from Hokkaido, Japan north to the Anadyr River in Russia. The vast majority of sockeye salmon spawn in inlet or outlet streams of lakes or in the lakes themselves. The juveniles of these "lake-type" sockeye salmon rear in lake environments for 1 to 3 years, migrate to sea, and return to natal lake systems to spawn after 1 to 4 years in the ocean. However, some sockeye salmon populations spawn in rivers without juvenile lake-rearing habitat. Their juveniles rear in slow velocity sections of rivers for 1 or 2 years (river-type) or migrate to sea as underyearlings, and thus rear primarily in salt water. As with lake-type sockeye salmon, river- and sea-type sockeye salmon return to natal spawning habitat after 1 to 4 years in the ocean (NOAA 2005).

5.10.4 Population Trends and Risks

After eight hydropower dams on the Columbia and Snake rivers were finished in the 1970s, Snake River sockeye spawning runs declined dramatically. Human-caused disturbances such as pollution, habitat loss and degradation, overfishing, and loss of spawning and rearing areas have combined to harm the natural reproduction of the sockeye salmon (USFWS 2005).

5.11 Snake River Basin Steelhead (*Oncorhynchus mykiss*)

Snake River Basin steelhead was listed as threatened under the ESA on Jan. 5, 2006 (71 FR 834). Critical habitat was designated by the USFWS on September 2, 2005 (70 FR 52630).

5.11.1 Range of Species

The present distribution of steelhead extends from Kamchatka in Asia, east to Alaska, and down to southern California (NOAA 2005), although the historic range of steelhead extended at least to the Mexico border.

The Snake River Basin steelhead Distinct Population Segment (DPS) is distributed throughout the Snake River drainage system, including tributaries in southwest Washington, eastern Oregon and north/central Idaho (NOAA 2005). Snake River steelhead migrate a substantial distance from the ocean (up to 932 miles) and use high elevation tributaries (typically 3281-6562 feet above sea level) for spawning and juvenile rearing. Snake River steelhead occupy habitat that is considerably warmer and drier (on an annual basis) than other steelhead ESUs (NOAA 2005).

5.11.2 Critical Habitat

Critical habitat was designated for steelhead by the USFWS on November 2, 1999. Critical habitat for the steelhead consists of river reaches of the Columbia, Snake, and Salmon Rivers, and all tributaries of the Snake and Salmon River presently or historically accessible to Snake River steelhead (except reaches above impassable natural falls, and Dworshak and Hells Canyon Dam).

5.11.3 Life History

Steelhead exhibit a complex suite of life history traits. They can be anadromous or freshwater resident (and under some circumstances, apparently yield offspring of the opposite form). Those that are anadromous can spend up to seven years in freshwater prior to smoltification, then spend up to 3 years in salt water prior to first spawning. Species of *Oncorhynchus* considered in this document spawn once then die (NOAA 2005).

Two subspecies of steelhead with anadromous life history are recognized in North America. These are: *O. mykiss irideus* (the coastal subspecies), which includes coastal populations from Alaska to California (including the Sacramento River), and *O. mykiss gairdneri* (the inland subspecies), which includes populations from the interior Columbia, Snake, and Fraser rivers (NOAA 2005).

Steelhead can be divided into two basic reproductive ecotypes, based on the state of sexual maturity at the time of river entry and duration of spawning migration. The stream-maturing type (summer-run steelhead in the Pacific Northwest and northern California) enters freshwater in a sexually immature condition between May and October and requires several months to mature and spawn. The ocean-maturing type (winter-run steelhead in the Pacific Northwest and northern California) enters freshwater between November and April, with well-developed gonads, and spawns shortly thereafter. Coastal streams are dominated by winter-run steelhead, whereas inland steelhead of the Columbia and Snake River basins are almost exclusively summer-run steelhead (NOAA 2005).

Snake River Basin steelhead are summer steelhead, as are most inland steelhead, and comprise two groups, A- and B-run, based on migration timing, ocean-age, and adult size. Snake River Basin steelhead enter fresh water from June to October and spawn during the following spring from March to May. Their eggs incubate in nesting gravel (redds) for up to four months before hatching as alevins, a larval life stage dependent on food stored in a yolk sac. Snake River Basin steelhead usually smolt as 2- or 3-year-olds (NOAA 2005).

5.11.4 Population Trends and Risks

Naturally produced fish make up only a small fraction of the total adult run of the Snake River steelhead ESU. Although several large production hatcheries for steelhead exist throughout this ESU, relatively few data exist regarding the numbers and relative distribution of hatchery fish that spawn naturally, or the consequences of such spawnings when they do occur. On a more positive note, sharp upturns in 2000 and 2001 in adult returns in some populations and evidence for high smolt-adult survival indicate that populations in this ESU are still capable of responding to favorable environmental conditions. In spite of the recent increases, however, abundance in most populations for which there are adequate data are well below interim recovery targets.

Construction of dams beginning at the turn of the century eliminated vast areas of important habitat once accessible to steelhead. Creation of eight large dams and reservoirs in their migration corridors, and excessive harvest are the other primary factors contributing to the salmons decline. Deterioration of their spawning and nursery habitats, predation, water withdrawal from streams for other uses, and impacts from hatchery fish, are among the other causes. Impacts of climate change are also considered a significant factor for decline (i.e. prolonged drought conditions).

5.12 Utah Valvata Snail (*Valvata utahensis*)

The Utah valvata snail was listed as endangered under the ESA on December 14, 1992. It is currently listed as endangered throughout its entire range. This species has recently been proposed for delisting (74 FR 34539).

5.12.1 Range of Species

The Utah valvata snail once was found in the prehistoric lakes and rivers covering parts of California, Nevada, Idaho, Wyoming and Utah. The 'modern' range extended as far downstream as Grandview (rm 487). At present this species is only found in a few springs and mainstem river sites in Middle Snake River from American Falls Reservoir to the Hagerman Valley. A few additional sites are located immediately upstream and downstream of Minidoka Dam near the Eagle Rock damsite (rm 709) and below American Falls Dam downstream to Burley (USFWS 1995).

5.12.2 Critical Habitat

No critical habitat has been designated for the Utah valvata snail.

5.12.3 Life History

Utah valvata snails occur in flowing water that is cold, clean and well-oxygenated. This species is found in areas with clean mud bottoms and submerged aquatic vegetation (USFWS 1995). A rooted aquatic plant, chara, concentrates calcium carbonate and silicon dioxide and is a common associate of this snail. Utah valvata snails avoid areas with pure gravel boulders or swift current. This snail is approximately 0.2 inches in height and is about as wide as it is high. It is primarily a detritivore grazing diatoms and small plant debris found on the mud surface (USFWS 1995).

5.12.4 Population Trends and Risks

The formation of reservoirs, diversions of rivers and other forms of habitat modification have lead to the deterioration of the Utah valvata snail habitat. In addition, altered natural flow and pollution has reduced water quality and deteriorated the free-flowing, cold water environments this species requires.

SECTION 6.0 IMPACTS ON THREATENED AND ENDANGERED SPECIES

For the action considered in this BE, there are no direct impacts to listed species. Therefore, approving the issuance of the general NPDES permit for placer miner activities in Idaho would not change the environmental baseline or directly affect ESA-listed species. However, there may be indirect effects of issuing the GP.

This BE evaluates the discharges and activities that would be authorized under the general NPDES permit. The analysis of impacts assumes that the species of interest are exposed to conditions that may exist if the NPDES permit conditions are met. Potential impacts arising from violations of permit conditions are not evaluated.

There are three possible determinations of effects under the ESA (USFWS and NMFS 1998). The determinations and their definitions are:

- **No Effect (NE)** – the appropriate conclusion when the action agency determines its proposed action will not affect listed species or critical habitat.
- **May affect, not likely to adversely affect (NLAA)** – the appropriate conclusion when effects on listed species are expected to be discountable, or insignificant, or completely beneficial. **Beneficial effects** are contemporaneous positive effects without any adverse effects to the species. **Insignificant effects** relate to the size of the impact and should never reach the scale where take occurs. **Discountable effects** are those extremely unlikely to occur. Based on best judgment, a person would not (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.
- **May affect, likely to adversely affect (LAA) –** the appropriate conclusion if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial (see definition of "is not likely to adversely affect"). In the event the overall effect of the proposed action is beneficial to the listed species, but also is likely to cause any adverse effects, then the proposed action "is likely to adversely affect" the listed species. An "is likely to adversely affect" determination requires formal section 7 consultation.

For the purposes of Section 7 of the ESA, any action that is reasonably certain to result in "take" is likely to adversely impact a proposed or listed species. "Take," as defined as in Section 3(18) of the ESA, means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct". The USFWS further defines "harm" as "significantly impairing behavioral patterns such as breeding, feeding, or sheltering", and "harass" as "actions that create the likelihood of injury of listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering". Further, the "incidental take" in Section 10(a)(1)(B) of the ESA means "any taking otherwise prohibited by Section 9(a)(1)(B) if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity". Finally, a "take" may occur only to individuals of a species, not to a species' habitat or to designated critical habitat. The take prohibition does not extend to proposed or candidate species.

6.1 Parameters of Concern

The potential impacts of activities and discharges that would be authorized under the general NPDES permit on threatened and endangered species are discussed below. The only parameter of concern under this permit is Total Suspended Solids (TSS).

6.1.1 Dredging Effects on Fish Spawning and Early Life Stages

The following information was compiled from the California Department of Fish and Game (CDFG) Suction Dredge Permitting Program Literature Review (2009).

6.1.1.1 Impacts on Fish Spawning Habitat

Fish species including Chinook salmon, steelhead and trout utilize small gravel to cobble substrates for spawning habitat. Salmonids typically dig a redd (nest) and deposit eggs within the stream sediment where incubation, hatching and emergence take place. Optimum substrate for embryos is a gravel/cobble mixture with diameter of 0.5-4 inches with less than five percent fines or particles smaller than 0.3 inch in diameter (Bjornn and Reiser 1979). While optimal spawning habitat defined by habitat suitability models is typically found in riffles, proximity of habitat to structural cover (pools, large woody debris, boulder clusters and overhanging vegetation) and hydrodynamic shear zones provide equally important refuge from predation and resting zones for energy conservation (Bilski 2008, Wheaton et al. 2004, Merz 2001).

Tailings created by dredges may offer increased availability of spawning gravel by loosening compacted gravels, which could result in attractive material for spawning (Badali 1988; Harvey and Lisle 1998). Tailings are often located near riffle crests, preferred locations for the construction of redds by salmonids as they consist of loose substrate of the appropriate size). Hassler et al. 1986 indicated that suction dredging increases availability of spawning gravel by loosening compacted gravels. However, loose substrate found in dredge tailings is often too unstable and embryos may experience reduced survival due to increased scouring (Thomas 1985; Harvey and Lisle 1999). A study by Harvey and Lisle (1999) determined that Chinook salmon redds located on dredge tailings experienced greater scouring than those on natural substrates. Chinook salmon that spawn in the fall may be affected by constructing redds on dredge tailings, which could be subject to higher scour than unaltered substrates and could result in compromised reproductive success (Harvey and Lisle 1998).

Tailing piles from suction dredge mining may become suitable for spawning habitat after the substrate has been dispersed resulting in more stable habitat (Hassler et al. 1986). Many species of fish spawn after tailings from dredging during summer and fall have dispersed (Thomas 1985; Harvey 1986). However, the extent to which fish populations depend on dredge tailings for spawning habitat likely depends on the availability of suitable unaltered substrate and the quality of the dredge tailings (Harvey and Lisle 1999).

6.1.1.2 Impacts on Spawning Habitat Resulting in Effects on Eggs and Embryos

In order to produce viable young, salmonids require spawning habitat with loose, uncompacted gravels with high permeability consisting of unclogged interstices that allow for the removal of metabolic wastes (Hausle and Coble 1976). However, Mesick (2009) suggested that material that is too clean may be detrimental to Chinook eggs because the eggs are not insulated from agitation or eggs may become dislodged especially in high flow areas. As discussed in the previous section, suction dredging has the potential to influence the availability of suitable spawning and incubation habitat for spawning salmonids. Availability of intragravel water flow (Vaux 1962; Cooper 1965) and dissolved oxygen is critical for the survival of developing salmonid eggs (Cooper 1965; Daykin 1965). Higher levels of fines or increased organic matter resulting from suction dredging can reduce flow and oxygen concentrations which can result in negative effects on eggs and embryos including reduced size of embryos at various developmental stages, increased development time of alevins, and higher pre- and post-hatching mortality (Merz et al. 2006; Spence et al. 1996; Brannon 1965; Shumway et al. 1964; Silver et al. 1963). Increased fines in dredging areas can also delay emergence of fry. This may result in smaller fry that are less able to compete for resources than their larger counterparts (Redding et al. 1987).

The permit requires that dredging and discharging are prohibited within 500 feet of locations where fish are spawning or fish eggs or alevins are known to exist at the time dredging occurs. In addition, suction dredge operations must not occur in gravel bar areas at the tail of pools where operations result in fine sediment discharging onto gravel bars. Finally the permit requires avoidance of dredging concentrated silt and clay that would result in a significant increase in turbidity by moving to a new location or reducing the volume and turbidity of effluent discharge by limiting operation speed of the suction dredge. These best management practices outlined in the general permit for Idaho small placer miners should minimize potential adverse effects to eggs and embryos due to alteration of spawning and incubation habitat.

6.1.1.3 Impacts of Mercury

There is the potential for suction dredge mining to resuspend contaminants such as mercury. Mercury was used in historic gold mining operations to amalgamate gold mines. Elemental mercury may be present in stream beds and banks and could be remobilized by suction dredge operations. Inorganic mercury tends not to be highly bioaccumulated or biomagnified in aquatic food webs. Inorganic mercury can be methylated by microbes to form methyl mercury, a more bioavailable form of mercury that due to its bioaccumulation by aquatic organisms is the more toxic form of mercury. Methylation of mercury generally occurs by microbes that prefer anoxic or low oxygen conditions.

Since suction dredge mining creates turbidity in the stream it is likely this action increases oxygenation of the waters and methylation of inorganic mercury would be less likely to occur in these habitats. Additionally, best management practices in the permit require that if mercury is found during suction dredge operations, the operator must stop dredging and work with the local regional office of IDEQ to ensure that the mercury is disposed of properly. Therefore, mercury should not result in adverse effects to the aquatic organisms downstream of suction dredge operations.

6.1.1.4 Egg and Larval Entrainment

Excavation and subsequent displacement of eggs, fry and larvae can occur when they are suctioned into the equipment and can result in mortality (Harvey and Lisle 1998). Griffith and Andrews (1981) investigated the effect of suction dredging entrainment on the mortality of aquatic organisms and found 100% mortality among uneyed eggs and 30% mortality among eyed eggs in entrained cutthroat trout and 83% mortality for rainbow trout sac-fry. His results also suggest that once sac-fry "button-up" they are less susceptible to entrainment-related mortality. Trout greater than four inches (e.g. fingerlings) were able to avoid entrainment for dredge intake velocities less than 1 ft/sec. Griffith and Andrews (1981) determined that fingerlings still survive if they are entrained by dredging. Fish have been observed feeding from the discharge of suction dredges (Lewis 1962). Fish would likely attempt to eat any eggs, larvae and/or fry that survived entrainment or exposed following dredging. Any eggs or sac-fry that survive to return to the substrate for cover would likely experience increased predation from other predators displaced during suction dredging.

The permit requires that dredging and discharging are prohibited within 500 feet of locations where fish are spawning or fish eggs or alevins are known to exist at the time dredging occurs. These best management practices outlined in the general permit for Idaho small placer miners should minimize the potential for entrainment of eggs and embryos to occur.

6.1.2 Effects on Juvenile and Adult Fish

6.1.2.1 Juvenile and Adult Entrainment

Studies show that most juvenile and adult fish are likely to avoid or survive passage through a suction dredge (North 1993). In a study by Griffith and Andrews (1981) showed that all 36 juvenile and adult rainbow trout and brook trout intentionally entrained by suction dredges in small Idaho streams survived. Sublethal impacts such as disorientation and infections were not assessed. However, the permit requires that dredging and discharging are prohibited within 500 feet of location where fish are spawning or fish eggs or alevins are known to exist at the time dredging occurs. These best management practices outlined in the general permit for Idaho small placer miners should minimize the potential for entrainment of juvenile and adult listed fish.

6.1.2.2 Pool Formation/Loss

It is possible that excavations from dredging operations can result in temporarily form pools or deepen existing pools which may improve fish habitat. Deep scour may intersect subsurface flow creating pockets of cool water during summer which can provide important habitat for fish (Nielsen 1994). During times of low flow in a river or stream, increased water depth can provide a refuge from predation by birds and mammals (Harvey and Stewart 1991). Eight fish occupying a riffle during late summer in Butte Creek, California, moved into a dredged excavation nearby (Harvey 1986). In addition, pools created by abandoned dredger sites can provide holding and resting areas for juvenile and adult salmonids (Stern 1988). On the other hand, sedimentation from the dredging site can fill in pool habitat downstream of the excavation site. One study found that the number of rainbow trout in a small pool in Butte Creek, California declined 50%

when upstream dredging filled in 25% of the pool volume (Harvey 1986). Following one year of dredging activity on Gold Creek in Missoula County, Montana, all of the gravel at the dredged area had moved downstream to fill in a downstream pool. Due to the creation of a pool at the dredged site, there was no net loss of pool habitat in the stream (Thomas 1985). Additionally, most pools and depositional piles are removed during subsequent winter/spring seasonal flows.

6.1.2.3 Sedimentation

Sediment discharges from suction dredges are sorted based on size, with coarser sediments settling nearer to the dredge and finer sediments transported further downstream. Turbidity and suspended sediment levels were measured to be two to three times higher than background levels at 164 feet downstream from dredging operations (Stern 1988). Suction dredging generally causes turbidities of between 15 and 50 Nephelometric Turbidity Units (NTU) immediately downstream of the operation, with background levels returning between 164 and 525 feet downstream and in some cases as short as 36 feet (Harvey 1986; Somer and Hassler 1992; Thomas 1985, Griffith and Andrews 1981, Stern 1988, Prussian et al. 1999). The extent of the turbidity plume can be influenced by the composition of the streambed. Dredging in streams with higher proportions of fine materials will generate a more extensive turbidity plume (Harvey et al. 1982, Harvey 1986). Studies have shown that suction dredging can elevate suspended sediment concentrations up to 300-340 mg/L immediately downstream of the dredge with levels decreasing to background within 524 feet (Stern 1988, Thomas 1985).

Stern (1988) monitored turbidity and total suspended solids (TSS) at transects upstream and downstream from dredging sites. At 164 feet below the dredge, turbidity and TSS levels were 2-3 times higher than the upstream controls while at 328 feet below the dredge, turbidity and TSS levels approached control values. Thomas (1985) characterized the suspended sediment plume for suction dredge operations by monitoring TSS downstream from a suction dredge operation. The study indicated that suspended sediment returned to ambient levels 99 feet from the suction dredge. This study also determined that the majority of the suspended sediment was re-deposited within 20-36 feet of the dredge operation site. Prussian et al. (1999) monitored suspended solids and turbidity resulting from operations using 8-10 inch nozzles in the Fortymile River in eastern Alaskan River. They found that a relatively narrow turbidity plume (7% of the river width) was generated by a 10-inch suction dredge nozzle and the suspended solids concentration was elevated up to 524 feet downstream from the dredge. Harvey et al. (1982) and Harvey (1986) measured settleable solids and turbidity in three California Rivers from dredging activities. The settleable solids and turbidity levels reduced to background levels within 100 feet downstream. The study also noted that substrate type was very influential in determining which particles were suspended. The disturbance of clay deposits increased turbidity whereas disturbance of sand and gravel did not increase turbidity. Harvey (1986) found turbidity peaked at 50 NTU 16 feet downstream from a dredging operation and returned to background levels within 264 feet downstream. These studies demonstrate that effects of suction dredging on turbidity and suspended sediment concentrations are limited to the area immediately downstream of the operation for the duration of the dredging activity.

Sedimentation of habitat downstream from dredging activities can adversely impact the microhabitats of bottom-oriented stream fish such as juvenile salmon because these fish rely on cover that can become embedded during dredging operations (Havey 1986). Hassler et al. (1986) found that high densities of deposited sediment 33-52 feet below dredging sites markedly reduced the amount of instream cover for juvenile salmonids due to fine sediment filling gravel interstices and stream bottom roughness. Suttle et al. (2004) found that juvenile steelhead growth in the south fork Eel River decreased steeply and almost linearly with increasing fine-sediment concentration. Steelhead confined to channels with higher levels of sedimentation experienced lower food availability than those in less embedded channels. At higher levels of embeddedmess, fine sediments can fill spaces under and between coarse obbles, producing a flat bed. As interstitial refuges and prey declined, steelhead spent less time sheltering behind or under cobbles and more time actively swimming.

A number of BMPs are included in the suction dredge permit to minimize these potential impacts. The permit requires that dredging and discharging are prohibited within 500 feet of locations where fish are spawning or fish eggs or alevins are known to exist at the time dredging occurs. In addition, suction dredge operations must not occur in gravel bar areas at the tail of pools where operations result in fine sediment discharging onto gravel bars. Finally the permit requires avoidance of dredging concentrated silt and clay that would result in a significant increase in turbidity by moving to a new location or reducing the volume and turbidity of effluent discharge by limiting operation speed of the suction dredge. These best management practices outlined in the general permit for Idaho small placer miners should minimize potential adverse effects to salmonids due to sedimentation and suspended sediment.

6.1.2.4 Loss of Woody Debris and Large Boulders

Coarse woody debris and large boulders increase flow complexity and water retentionin streams, and when water flow is backed up due to coarse woody debris, pools may form, which are an important habitat for many species of fish (McIntosh et al. 2000). Woody debris is also an important energy source for benthic invertebrates (Anderson et al. 1978, Bisson et al. 1987). Benthic invertebrates are an important food source for juvenile salmonids (Mundie 1974). Woody debris provides cover for adult salmonids (Bjornn and Reiser 1991) and low gradient sediment deposits upstream of debris accumulation can provide suitable spawning substrate in sediment-poor drainages (Everest and Meehan 1981). Removal of coarse woody debris or boulders from a river can have substantial impacts on the stream environment, including redistribution of sediment and changes in stream topography and changes in size and location of pools to name a few. These changes in flow can alter the production of benthic invertebrates and the survival and development of developing fish embryos (Bilski 2008, Merz et al. 2006).

The permit prohibits the use of motorized equipment to move boulders, logs or other natural obstructions. This should ensure that important habitat for aquatic organisms, which includes large woody debris or large boulders will not be altered. This BMP will minimize potential adverse effects to benthic invertebrates and fish from the potential loss or change of habitat due to movement or elimination of woody debris or boulders.

6.1.2.5 Behavioral Responses

Observations in a number of studies have shown fish behavioral responses to noises and vibrations generated by dredging. Feeding behavior can be affected as juvenile salmonids have been observed feeding on entrained organisms at dredge outfalls (Thomas 1985, Hassler et al. 1986). Temporary dredge piles spanning a substantial portion of the stream width could affect normal feeding and escapement behavior of fish. Deeper areas or pools created by dredges may be occupied by fish as habitat once dredging is completed (Harvey and Lisle 1998). Hassler et al. (1986) observed spring-run Chinook and summer-run steelhead adults holding within 164 feet of active dredges, but speculated that dredging may have inhibited upstream movement by fish. Stern (1988) observed that suction dredging did not appear to influence the behavior of adult spring-run salmonids in their holding habitat.

While there is the potential for behavioral changes due to suction dredging operations, significant adverse impacts have not been shown from these behavioral changes. Studies have demonstrated that salmonids remained in their holding habitat when suction dredging occurred near their habitat. In some instances, behavioral changes from suction dredging operations can be beneficial to the species, as fish may be able to occupy pools created by suction dredging or may use the entrained benthic invertebrates in the effluent of the suction dredge operation as a food source. BMPs included within the permit to limit potential effects on behavior of fish. The permit requires that dredging and discharging are prohibited within 500 feet of locations where fish are spawning or fish eggs or alevins are known to exist at the time dredging occurs. Suction dredges shall not operate within 800 feet of another suction dredging operation occurring simultaneously or a location where it is apparent that another operation has taken place within the past month. Limiting the simultaneous operation of suction dredges will minimize the noise and vibration during suction dredging.

6.1.2.6 Suspended Sediment

High concentrations of suspended sediment can alter survival, growth and behavior of aquatic species. Indirect effects include reduction of light input and occlusion of gravel interstices for hiding places and food. Direct effects include abrading or clogging delicate membranes, skin irritation and abrasions, and facilitation of infections. Suspended sediments can cause direct damage to gills, reduced growth rates due to limited vision in turbid waters altering the ability to find prey, lowered growth rate due to reduced instream production of food organisms due to fine sediment deposition and potentially reduced light penetration, and a reduction in carrying capacity due to channel morphology changes (Roelofs 1983). Impacts due to suspended sediment can increase with longer exposure time, smaller sediment particle size, temperature extremes and higher organic content of the sediment (Newcombe and MacDonald 1991, Servizi and Martens 1987, Servizi and Martens 1991, McLeay et al. 1987). Elevated suspended sediment may reduce reactive distance of salmonids to drifting prey (Barrett et al. 1992) and prey capture success (Berg and Northcote 1985). This effect may be offset by the fact that the sediment plume may contain entrained invertebrates as a result of dredging.

Growth rates of steelhead and coho salmon in laboratory channels were higher and their emigration rates lower in clear water than in turbid water (22-286 NTU) after 11-21 days (Sigler et al. 1984). Juvenile Chinook salmon spend more time foraging in water of moderate turbidity (20-25 NTU) than in clearer water (Gregory 1993). Brook trout are also more active and spend less time near cover in moderately turbid water than in clear water (Gradall and Swenson 1982). Coho salmon do not avoid turbidities as high as 70 NTU, but move into turbid water when frightened (Glisson and Bilby 1982). Sigler et al. (1984) analyzed the effect of chronic turbidity on feeding of 30-65 mm long steelhead and coho salmon. Fish subjected to continuous clay turbidities grew less well than those living in clear water, and more of them emigrated from channels during the experiment. For salmon, suspended solids usually cause greater stress for earlier life stages than for adults. Therefore, increased suspended sediment loads can negatively impact eh quality and quantity of production if they coincide with the emergence and rearing of young salmonids (Sigler et al. 1984). While extremely high levels of sediment can be very harmful or lethal, these concentrations of suspended sediment are probably rarely produced by small suction dredging and fish can usually avoid these higher concentrations (Harvey 1986). Thomas (1985) and Harvey (1986) concluded that in streams where dredges operate at low density, suspended sediment is not a significant concern because effects are highly localized and readily avoided by mobile organisms.

Suction dredging typically produces turbidities no higher than 50 NTU immediately downstream of the operation with suspended sediment levels returning to background within 500 feet downstream of the operation. The State of Idaho has established a WQS for turbidity and it shall not exceed background turbidity by more than 50 NTU instantaneously or more than 25 NTU for more than 10 consecutive days. The general permit also requires the following effluent limit for turbidity in that a visual increase in turbidity above background turbidity 500 feet downstream of the suction dredge during operations is considered a violation of the permit. BMPs have been included in the general permit to minimize the potential for turbidity. Suction dredges shall not operate within 800 feet of another suction dredging operation occurring simultaneously or a location where it is apparent that another operation has taken place within the past month. The permit requires that dredging and discharging are prohibited within 500 feet of locations where fish are spawning or fish eggs or alevins are known to exist at the time dredging occurs. In addition, suction dredge operations must not occur in gravel bar areas at the tail of pools where operations result in fine sediment discharging onto gravel bars. Finally the permit requires avoidance of dredging concentrated silt and clay that would result in a significant increase in turbidity by moving to a new location or reducing the volume and turbidity of effluent discharge by limiting operation speed of the suction dredge. Adverse effects to fish general occur at concentrations of suspended sediment that are higher than those seen during small suction dredging operations. These best management practices outlined in the general permit for Idaho small placer miners should minimize potential adverse effects to aquatic species due to suspended sediment.

6.1.3 Effects to Snail Species

There are not many studies looking at the effects of small suction dredging operations on snail species. One direct effect to benthic invertebrates by suction dredge operations can be destruction of the benthic environment in which they reside. In general, benthic invertebrates rapidly re-colonize small patches of new or disturbed substrate in streams (Mackay 1992). Griffith and Andrews (1981) studied the effects of a small suction dredge on fishes and invertebrates in Idaho streams and found most of the recolonization of dredged plots were completed by benthic invertebrates after 38 days. In a study of dredging effects in an Alaskan stream, Royer et al. (1999) found that density of benthic invertebrates was reduced in the first 32 feet downstream of dredging with density returning to upstream composition within 260-520 feet downstream of the activity. Since most of the snail species discussed in this biological evaluation prefer habitats on rocks and cobble, they may be adversely impacted with fine sediment covering these rocks and making grazing on algae more difficult. Snails and benthic invertebrates may also become entrained during the suction dredge operation. Griffith and Andrews (1981) found mortality rates of entrained benthic macroinvertebrates varied by species but were generally low, usually less than one percent of over 3,600 individuals. Again, since the species of listed snails in this biological evaluation prefer habitats on rocks and cobble, they will be less likely to become entrained in the suction dredge operations.

BMPs within the permit that will limit potential adverse effects on the listed snail species. Suction dredge operations must not occur in gravel bar areas at the tail of pools where operations result in fine sediment discharging onto gravel bars. The permit requires avoidance of dredging concentrated silt and clay that would result in a significant increase in turbidity by moving to a new location or reducing the volume and turbidity of effluent discharge by limiting operation speed of the suction dredge. Suction dredges shall not operate within 800 feet of another suction dredging operation occurring simultaneously or a location where it is apparent that another operation has taken place within the past month. Many of the listed snail species covered by this biological evaluation occur in locations like nature preserves and hot springs which are areas in which small suction dredging is not allowed or areas where suction dredging is not expected to occur based on previous permit requests. The above factors should minimize potential effects to the listed snail species from small suction dredge operations.

6.2 Effects Determination

This section provides impact analysis for the 12 ESA-listed species considered in this BE.

6.2.1 Banbury Springs Lanx

The proposed activities associated with the corresponding permit are not likely to impact the Banbury springs lanx. Although it may occur in other places, the three areas where it has been found are protected (TNC Nature Preserves and State Nature Preserves), and suction dredging is not permitted. Additionally, BMPs within the permit should minimize potential adverse effects to listed snails. Due to the fact that listed Banbury Spring lanx do not reside in areas used for dredging and BMPs will minimize sediment effects to the snail habitat, the small placer miner permit should result in insignificant effects to the listed snails. Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the Banbury Springs Lanx.

6.2.2 Bliss Rapids Snail

Although the Bliss Rapids snail may occur in other places, most areas where the Bliss Rapids snail has been found are protected (TNC Nature Preserves and State Nature Preserves), and suction dredging is not permitted. Additionally, BMPs within the permit should minimize potential adverse effects to listed snails. Due to the fact that listed Bliss Rapids snails do not reside in areas used for dredging and BMPs will minimize sediment effects to the snail habitat, the small placer miner permit should result in insignificant effects to the listed snails). Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the Bliss Rapids snail.

6.2.3 Bruneau Hot Springsnail

The Bruneau hot springsnail is found only in the warm springflows of Hot Creek and 128 small, flowing thermal springs and seeps along an approximately 5.3 mile length of the Bruneau River in southwestern Idaho. These spring sites are located primarily above the high-water mark of the Bruneau River, and therefore, the Burneau hot springsnail would be unlikely to occur in areas where impacts from suction dredging occurs. Additionally, BMPs within the permit should minimize potential adverse effects to listed snails. Due to the fact that listed Bruneau hot springnail do not reside in areas used for dredging and BMPs will minimize sediment effects to the snail habitat, the small placer miner permit should result in insignificant effects to the listed snails. Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the Bruneau hot springsnail.

6.2.4 Bull Trout

Suction dredges can result in adverse effects to bull trout populations. Bull trout spawn in gravel areas of streams from September into December and their eggs and fry remain in the gravel during winter. Incubation of bull trout eggs also occur over a longer period than other species and their young have an extended period of residency in spawning gravels - 200 days as opposed to about 60 days for other trout.

Direct effects to trout spawning occur when the spawning gravels themselves are disturbed and the eggs and fry are either crushed or exposed to predators. Dredging may also adversely affect fish eggs and fry by disturbing the fine sand and silt in the stream which is carried down stream and blankets the spawning areas suffocating eggs and fry.

However, due to the potential for adverse effects to spawning as well as eggs and fry, dredging and discharging are prohibited within 500 ft. of locations where fish are spawning or fish eggs or alevins are known to exist at the time of dredging. Because the different species of fish spawn at different times, some streams have fish eggs or fry in the gravel during every month of the year.

Additional BMPs are required for operating recreational suction dredges to prevent damaging fish populations and were discussed in sections 6.1.1 and 6.1.2. Some of these include:

1. Do not operate in the gravel bar areas at the tails of pools. This is the area preferred by trout and salmon for spawning.

2. Do not operate in such a way that fine sediment from the dredge discharge blankets gravel bars.

3. Do not change the stream channel in such a way that the current is directed into the bank causing erosion or destruction of the natural form of the channel.

The best areas for locating gold which are not likely to affect aquatic life are around boulders near the upstream end of pools where the current first starts to slow, in seams and pockets in exposed bedrock and around midstream boulders or on the inside of a river bed at or near the head of a gravel bar where the larger materials have accumulated.

If the above BMPs and requirements of the permit are followed by small suction dredge mining operators in permitted waters of Idaho, potential effects for the bull trout should be insignificant. Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the bull trout.

6.2.5 Fall Chinook Salmon

Suction dredges can result in adverse effects to Chinook populations. Salmon spawn in gravel and cobblestones up to 3-4 inches in diameter. The preferred site is a gravel bar at the tail or side of pools covered by 6 to 12 inches of smoothly flowing water. Fall Chinook salmon spawn in October and November. Their eggs and fry remain in the gravel until the following spring.

Direct effects to salmon spawning occur when the spawning gravels themselves are disturbed and the eggs and fry are either crushed or exposed to predators. Dredging may adversely affect fish eggs and fry is by disturbing the fine sand and silt in the stream which is carried down stream and blankets the spawning areas suffocating eggs and fry.

However, due to the potential for adverse effects to spawning as well as eggs and fry, dredging and discharging are prohibited within 500 ft. of locations where fish are spawning or fish eggs or alevins are known to exist at the time of dredging. Because the different species of fish spawn at different times, some streams have fish eggs or fry in the gravel during every month of the year.

Additional BMPs are required for operating recreational suction dredges to prevent damaging fish populations and were discussed in sections 6.1.1 and 6.1.2. Some of these include:

1. Do not operate in the gravel bar areas at the tails of pools. This is the area preferred by trout and salmon for spawning.

2. Do not operate in such a way that fine sediment from the dredge discharge blankets gravel bars.

3. Do not change the stream channel in such a way that the current is directed into the bank causing erosion or destruction of the natural form of the channel.

The best areas for locating gold which are not likely to effect aquatic life are around boulders near the upstream end of pools where the current first starts to slow, in seams and pockets in exposed bedrock and around midstream boulders or on the inside of a river bed at or near the head of a gravel bar where the larger materials have accumulated.

If the above BMPs and requirements of the permit are followed by small suction dredge mining operators in permitted waters of Idaho, this permit should result in insignificant effects for the fall Chinook salmon. Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the fall Chinook salmon.

6.2.6 Spring/Summer Chinook Salmon

Suction dredges can result in adverse effects to spring/summer Chinook populations. Salmon spawn in gravel areas in Idaho streams in gravel and cobblestones up to 3-4 inches in diameter. The preferred site is a gravel bar at the tail or side of pools covered by 6 to 12 inches of smoothly flowing water. Spring/summer Chinook salmon spawn in August and September. Their eggs and fry remain in the gravel until the following spring.

Direct effects to salmon spawning occur when the spawning gravels themselves are disturbed and the eggs and fry are either crushed or exposed to predators. Dredging may also adversely affect fish eggs and fry by disturbing the fine sand and silt in the stream which is carried down stream and blankets the spawning areas suffocating eggs and fry.

However, due to the potential for adverse effects to spawning as well as eggs and fry, dredging and discharging are prohibited within 500 ft. of locations where fish are spawning or fish eggs or alevins are known to exist at the time of dredging. Because the different species of fish spawn at different times, some streams have fish eggs or fry in the gravel during every month of the year.

Additional BMPs are required for operating recreational suction dredges to prevent damaging fish populations and were discussed in section 6.1.1 and 6.1.2. Some of these BMPs include:

1. Do not operate in the gravel bar areas at the tails of pools. This is the area preferred by trout and salmon for spawning.

2. Do not operate in such a way that fine sediment from the dredge discharge blankets gravel bars.

3. Do not change the stream channel in such a way that the current is directed into the bank causing erosion or destruction of the natural form of the channel.

The best areas for locating gold which are not likely to effect aquatic life are around boulders near the upstream end of pools where the current first starts to slow, in seams and pockets in exposed bedrock and around midstream boulders or on the inside of a river bed at or near the head of a gravel bar where the larger materials have accumulated.

If the above BMPs and requirements of the permit are followed by small suction dredge mining operators in permitted waters of Idaho, this permit should result in insignificant effects for the spring/summer Chinook salmon. Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the spring/summer Chinook salmon.

6.2.7 Grizzly Bear

The proposed activities do not include removal of any terrestrial habitat, and therefore, all potential grizzly bear habitat would remain intact, however, human presence may cause localized displacement of the species. Prey species such as fish and waterfowl may be disturbed and displaced by suction dredging activities, but the impacts would be localized. Indirect impacts to prey species may occur if a large amount of suction dredging occurs upstream of habitat areas of the prey species. However, BMPs should minimize potential impacts to fish species that may be prey for grizzly bears.

If the above BMPs and requirements of the permit are followed by small suction dredge mining operators in permitted waters of Idaho, this permit should result in insignificant effects for the grizzly bear. Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the grizzly bear.

6.2.8 Kootenai River White Sturgeon

The Kootenai River White Sturgeon is restricted to approximately 168 RM of the Kootenai River with critical habitat in Boundary County, Idaho. The proposed activities associated with the corresponding permit are not likely to impact the Kootenai River white sturgeon. The white sturgeon usually broadcast their eggs in the spring over clean cobble at depths greater than 20ft. Areas with these depths would not be used by small scale suction dredge placer mining. Additionally, the Kootenai River is only open to small placer miners from July 15 to August 15, which is several months past spawning season. Dredging and discharge are also prohibited within 500 ft. of where fish are spawning or fish eggs or alevins are known to exist at the time of dredging.

Due to the fact that the Kootenai River is closed during the spring when sturgeon spawn and BMP prohibit dredging within 500 ft. of alevins that are known to be present, this permit should result in insignificant effects for the Kootenai River White Sturgeon. Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the Kootenai River White Sturgeon.

6.2.9 Snake River Physa Snail

The proposed activities associated with the corresponding permit are not likely to impact the Snake River physa snail, although only two populations are believed to remain in the Hagerman and King Hill reaches of the Snake River, with potentially a third colony located immediately downstream of Minidoka Dam. Indirect impacts may occur if a large amount of suction dredging occurs upstream of these areas, and/or BMPs are not followed, causing excess sediment to float and settle downstream (Harvey and Lisle 1998).

If the above BMPs and requirements of the permit are followed by small suction dredge mining operators in permitted waters of Idaho, this permit should minimize potential adverse effects from sedimentation and result in insignificant effects for the Snake River physa snail. Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the Snake River physa snail.

6.2.10 Sockeye Salmon

Suction dredges can result in adverse effects to sockeye salmon populations. Salmon spawn in gravel areas in Idaho streams in gravel and cobblestones up to 3-4 inches in diameter. The preferred site is a gravel bar at the tail or side of pools covered by 6 to 12 inches of smoothly flowing water. Sockeye salmon spawn in late summer and autumn. Their eggs and fry remain in the gravel until the following spring.

Direct effects to salmon spawning occur when the spawning gravels themselves are disturbed and the eggs and fry are either crushed or exposed to predators. Dredging can also adversely affect fish eggs and fry by disturbing the fine sand and silt in the stream which is carried down stream and blankets the spawning areas suffocating eggs and fry.

However, due to the potential for adverse effects to spawning as well as eggs and fry, dredging and discharging are prohibited within 500 ft. of locations where fish are spawning or fish eggs or alevins are known to exist at the time of dredging. Because the different species of fish spawn at different times, some streams have fish eggs or fry in the gravel during every month of the year.

Additional BMPs are required for operating recreational suction dredges to prevent damaging fish populations and were discussed in sections 6.1.1 and 6.1.2. Some of the BMPs include:

1. Do not operate in the gravel bar areas at the tails of pools. This is the area preferred by trout and salmon for spawning.

2. Do not operate in such a way that fine sediment from the dredge discharge blankets gravel bars.

3. Do not change the stream channel in such a way that the current is directed into the bank causing erosion or destruction of the natural form of the channel.

The best areas for locating gold which are not likely to effect aquatic life are around boulders near the upstream end of pools where the current first starts to slow, in seams and pockets in exposed bedrock and around midstream boulders or on the inside of a river bed at or near the head of a gravel bar where the larger materials have accumulated.

If the above BMPs and requirements of the permit are followed by small suction dredge mining operators in permitted waters of Idaho, this permit should result in insignificant effects for the sockeye salmon. Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the sockeye salmon.

6.2.11 Steelhead

Suction dredges can result in adverse effects to steelhead populations. Salmon spawn in gravel areas in Idaho streams in gravel and cobblestones up to 3-4 inches in diameter. The preferred site is a gravel bar at the tail or side of pools covered by 6 to 12 inches of smoothly flowing water. Snake River steelhead spawn in March through May. Their eggs incubate in nesting gravel (redds) for up to four months before hatching as alevins.

Direct effects to steelhead spawning occur when the spawning gravels themselves are disturbed and the eggs and fry are either crushed or exposed to predators. Dredging may also adversely affect fish eggs and fry is by disturbing the fine sand and silt in the stream which is carried down stream and blankets the spawning areas suffocating eggs and fry.

However, due to the potential for adverse effects to spawning as well as eggs and fry, dredging and discharging are prohibited within 500 ft. of locations where fish are spawning or fish eggs or alevins are known to exist at the time of dredging. Because the different species of fish spawn at different times, some streams have fish eggs or fry in the gravel during every month of the year.

Additional BMPs are required for operating recreational suction dredges to prevent damaging fish populations and were discussed in sections 6.1.1 and 6.1.2. Some of the BMPs include:

1. Do not operate in the gravel bar areas at the tails of pools. This is the area preferred by trout and salmon for spawning.

2. Do not operate in such a way that fine sediment from the dredge discharge blankets gravel bars.

3. Do not change the stream channel in such a way that the current is directed into the bank causing erosion or destruction of the natural form of the channel.

The best areas for locating gold which are not likely to effect aquatic life are around boulders near the upstream end of pools where the current first starts to slow, in seams and pockets in exposed bedrock and around midstream boulders or on the inside of a river bed at or near the head of a gravel bar where the larger materials have accumulated.

If the above BMPs and requirements of the permit are followed by small suction dredge mining operators in permitted waters of Idaho, this permit should result in insignificant effects for steelhead. Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the steelhead salmon.

6.2.12 Utah Valvata Snail

Utah valvata snails are found in areas with clean mud bottoms and submerged aquatic vegetation, and avoid areas with pure gravel boulders, and therefore, would not be found in areas typically mined by suction dredging. Additionally, BMPs within the permit should minimize potential adverse effects to listed snails. Due to the fact that listed Utah valvata snails do not reside in areas used for dredging and BMPs will minimize sediment effects to the snail habitat, the small placer miner permit should result in insignificant effects to the listed snails. Therefore, EPA has determined that the NPDES general permit for Idaho small placer miners **may affect, but is not likely to adversely affect** the Utah valvata snail.

6.3 Cumulative Impacts

Cumulative impacts include the effects of future state, tribal, local, or private actions on ESA listed species or their critical habitat that are reasonably certain to occur in the action area considered in this BE.

Sport fishing and hunting, timber harvesting and restoration, mining and reclamation, agriculture, recreation and tourism, and public works projects, are all activities that take place throughout Idaho. Results of these activities include channelization, excess sedimentation, and bank instability in rivers and streams.

Along with these activities, the cumulative impacts analysis considers the small scale suction dredge placer mining that could occur during the next 5 years.

Fine sediment and turbidity increase temporarily immediately downstream of active dredges. In those areas where small amounts of fine sediment are being worked and stream flows are high, only small increases in turbidity would be detectable and the effects would be small and of short duration. If large amounts of fine sediments are encountered and stream flows are low or moderate, detectable increases in turbidity could occur at the site and could extend a hundred feet or more downstream. In areas of concentrated suction dredging, the amount of fine sediment deposition would be cumulative.

Cumulative impacts could occur from fuel, oil, and grease being spilled into the creeks and affecting aquatic resources. However, these products would be stored in areas and used in ways that minimize the opportunity for accidental spillage into the stream. Several conditions with which operators must comply should prevent any such impacts.

6.4 Interdependent /Interrelated Actions

Interdependent actions are defined as actions with no independent use apart from the proposed action. Interrelated actions are those that are a part of a larger action and depend upon the larger action for justification.

EPA is proposing to issue a general NPDES permit for small scale suction dredge placer mining in Idaho. The draft GP sets conditions on the discharge - or release - of pollutants for these operations. The permit places limits on the types and amount of pollutants that can be discharged to ensure the protection of water quality and human health. The ESA regulations require any action agency to evaluate all interdependent actions (actions having no independent utility apart from the proposed action) and interrelated actions (actions that are part of a larger action and depend on the larger action for their justification). The federal regulations at 50 CFR section 402.02 define an action as all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies in the United States or upon the high seas. Because this is an existing activity that EPA is proposing to authorize in a general permit and there are no other federal actions associated with this activity, EPA believes that there are no interdependent or interrelated actions to this action.

SECTION 7 CONSERVATION MEASURES

7.1 Best Management Practices

BMPs are measures that are intended to prevent or minimize the generation and the potential for the release of pollutants from industrial facilities to the waters of the United States through normal operations and ancillary activities. Pursuant to Section 402(a)(1) of the Clean Water Act, development and implementation of BMP Plans may be included as a condition in NPDES permits. Section 402(a)(1) authorizes EPA to include miscellaneous requirements that are deemed necessary to carry out the provision of the Act in permits on a case-by case basis . BMPs are required to control or abate the discharge of pollutants in accordance with 40 CFR § 122.44(k). The draft GP requires compliance with the following BMPs:

A. Dredging of concentrated silt and clay should be avoided.

The permittee shall use reasonable care to avoid dredging silt and clay materials that would result in a significant increase in turbidity. Reasonable care includes moving the dredge to a new location or reducing the volume of effluent discharge by limiting operation speed of the suction dredge.

This practice will decrease the amount of fine material that will be released into the water that could cause turbidity plumes in excess of the permitted distance.

B. If mercury is found during suction dredge operation, (i.e. mercury is collected in the sluice box), the operator must:

1) Stop dredging immediately;

2) Contact the local regional office of IDEQ (see page 3 for contact information);

3) Keep the mercury collected, do not remobilize the collected mercury; and

4) Work with the appropriate regional office of IDEQ to dispose of the mercury properly.

Mercury was used in historic placer mining operations to amalgamate gold fines. Elemental mercury may be present in stream beds and banks and if remobilized can result in impacts to fish and other aquatic life. Placer miners encountering mercury should take above steps to prevent mercury from reentering the water body.

C. Suction dredges shall not operate within 800 feet of:

1) another suction dredging operation occurring simultaneously or,

2) a location where it is apparent that another operation has taken place within the past month

This practice should ensure that the mixing zone of a facility does not overlap with that of another since 800 feet is the distance of a 500 foot mixing zone for each operation plus a designated 300 foot buffer before the next suction dredge would impact water quality.

D. Dredging and discharging are prohibited within 500 feet of locations where:

1) fish are spawning or

2) fish eggs or alevins are known to exist at the time dredging occurs

In addition: Suction dredge operation must not occur in gravel bar areas at the tail of pools or where operations result in fine sediments discharging onto gravel bars.

This BMP is designed to minimize impacts to fish spawning and spawning habitat.

E. Suction dredge operation must not change the stream channel way that directs the flow of water into a stream bank, which may cause bank erosion or destruction of the natural form of the stream channel.

Under Section 101 of the Clean Water Act, EPA is required to restore and maintain the chemical, physical and biological integrity of waters of the United States. Protection of the physical integrity of waterbodies includes protection of habitat

F. Suction dredge operation that results in undercutting, littoral channeling, stream bank or beach erosion, is prohibited.

This practice will ensure that erosion does not occur and that the finer sediments that may be found in these areas do not cause turbidity problems in the receiving waters.

G. Damming or diversions within a stream channel are not authorized by this GP.

EPA cannot authorize dams or diversions under Section 402 of the CWA. These are generally authorized under Section 404 of the CWA which is administered by the U.S. Army Corps of Engineers.

H. Explosives, motorized winches or other motorized equipment to move boulders, logs, or other natural obstructions are prohibited under this GP.

This practice should ensure that important habitat which includes large organic debris and large boulders in these areas will not be destroyed.

I. Wheeled or tracked equipment used in-stream is prohibited while dredging is in progress.

This practice should minimize turbidity from sources other than the suction dredge.

J. Care shall be taken by the operator during refueling of equipment to prevent spillage.

Any spills shall be cleaned up using materials such as sorbent pads and booms.

All spills shall be reported immediately or as soon as practical to IDEQ and the National Response Center at 1-800-424-8802.

All chemical or petroleum products shall be stored in a safe and secure location at all times. Fuel not stored and dispensed with an ANSO or UL approved safety container must be maintained not less than 100 feet from the mean high water mark.

This practice will decrease the potential for contamination of surface water by petroleum products.

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